Allegheny County Health Department
Air Quality Program
301 39th Street, Building 7
Pittsburgh, PA 15201

2015 Air Monitoring Network Review

July 1, 2015

KAREN HACKER, M.D., M.P.H., DIRECTOR
ALLEGHENY COUNTY HEALTH DEPARTMENT
542 FOURTH AVENUE. • PITTSBURGH, PA 15219 PHONE (412) 687-ACHD (2243)
• FAX (412) 578-8325 • WWW.ACHD.NET

Page #	TABLE OF CONTENTS

Page #	TABLE OF CONTENTS

1. EPA REQUIREMENTS FOR AIR MONITORING NETWORK DESCRIPTIONS

In October 2006, the U.S. EPA issued final regulations concerning state and local agency ambient air monitoring networks. In addition, EPA Region III provided guidance in what was to be submitted with the first round of a Network Description. Region III requested information described in 40 CFR Part 58 §58.10.

The requirements of 40 CFR Part 58 §58.10 are listed as follow:

§58.10 (a) requires for each existing and proposed monitoring site:

1. A statement of purpose for each monitor.
2. Evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of 40 CFR Part 58, where applicable.
3. Proposals for any State and Local Air Monitoring station (SLAMS) network modifications.

§58.10 (b) requires:

1. The Air Quality System (AQS) site identification number.
2. The location, including street address and geographical coordinates.
3. The sampling and analysis method(s) for each measured parameter.
4. The operating schedules for each monitor.
5. Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.
6. The monitoring objective and spatial scale of representativeness for each monitor.
7. The identification of any sites that are suitable and sites that are not suitable for comparison against the annual PM2.5 NAAQS as described in §58.30.
8. The Metropolitan Statistical Area (MSA), Core Based Statistical Area (CBSA), Combined Statistical Area (CSA) or other area represented by the monitor.

To view EPA's final revisions to the ambient air monitoring regulations, please follow the link below.

http://www.epa.gov/air/criteria.html

(1.1) Data Certification

Regarding all data generated by the criteria pollutant monitors described in this network review, no later than May 1, 2016, the Department will submit a letter certifying accuracy and reliability of CY 2015 criteria air pollutant monitoring data reported to AQS to the Mid Atlantic Regional Administrator in hard copy. An electronic copy of this information will also be sent to the Mid-Atlantic Region Associate Director, Office of Air Monitoring and Planning by May 1, 2016.

The Department's data certification will contain all required reports and will be accompanied with a certification statement from a responsible local official who can indicate that;

- The ambient concentration data and the quality assurance data have been completely reported to the AQS database.
- The ambient data are accurate to the best of his or her knowledge taking into consideration the quality assurance findings according to 40 CFR Section 58.15(a).

(2) CHANGES SINCE THE LAST AIR MONITORING NETWORK REVIEW

(2.1) Monitor Reductions

(2.1.1) Natrona Lead Monitor

The Department discontinued the Natrona lead monitor from the air monitoring network as of December 31, 2014 after approval was granted from EPA Region III. The Allegheny Ludlum melt shop that made the installation of this monitor necessary ceased operation during July 2010. The Natrona lead monitor never exceeded the lead NAAQS since its activation in January 2010. Additionally, the measured lead levels dropped steadily since the melt shop shut down. Allegheny Ludlum's 2012 emission inventory indicates that the total lead output for the entire facility equaled 0.09 TPY.

(2.1.2) 2013 Network Review Candidates

The EPA approved 2013 network review identified the "Downtown" carbon monoxide monitoring site and the "Lawrenceville" nitrogen dioxide monitor as candidates for discontinuation after the near road monitoring site was activated. Both of these monitors were deactivated and removed from the network as of August 2015.

(2.1.3) Wilson Elementary Hydrogen Sulfide Monitor

The hydrogen sulfide monitor was placed at Wilson Elementary in Imperial, PA on January 1, 2009 at the request of school employees and parents of students due to odors produced by the adjacent residential landfill. Over the past several years, complaints have been drastically reduced in frequency due to mandated remedial and operational improvements at the landfill. Hydrogen sulfide readings remained near or below the detection limit of the monitor during 2014. The decision was made to discontinue monitoring as of January 2015.

(2.2) Monitor Additions

(2.2.1) Parkway East Near Road Monitoring Site

The Pittsburgh CBSA (Core Based Statistical Area) that includes Allegheny County was selected by the EPA to be among first tier areas required to install a near road NO_2 air monitoring site, in compliance with the recently revised NO_2 NAAQS.

This site was targeted to be installed and operational by January 1, 2014. There were considerable delays in the competitive bidding and the contract award process and the site was finally activated by August 2015. For more information regarding this monitoring station, see section 8.19 (page 78).

(2.2.2) Bridgeville Lead Monitor

The Bridgeville lead monitor experienced high lead measurements during March and May of 2014, leading to a documented exceedance of the lead NAAQS. In response to this occurrence, the sampling frequency of this monitor was increased from the default 1 in 6 days to 1 in 3 days starting with the 2015 calendar year.

(2.3) Ongoing Special Studies

(2.3.1) Lawrenceville Toxic Metals Study

The metals sampling study continued near a metallurgical foundry in Lawrenceville. This study includes every three day TSP sampling and analysis for manganese, total chromium and lead. A study report with current results may be viewed on the Air Quality Program website at: http://www.achd.net/air/pubs/pdf/032715_LawrencevilleToxicMetals.pdf

(2.3.2) Imperial Pointe Marcellus Shale Gas Well Monitoring

A community based air sampling project was initiated during March 2014 at Imperial Pointe at the request of local residents. Well drilling activity started during July 2014 on a property adjacent to the community. SUMMA canister 24 hour samples are collected every six days and are analyzed by method TO-15 by EPA's Fort Meade Laboratory in Maryland. Sampling will continue during drilling and fracking activity. A study report with current results may be viewed on the Air Quality Program website at: http://www.achd.net/shale/pubs/022315_Imperial_Pointe_data-update.pdf

(2.3.3) Deer Lakes Marcellus Shale Gas Well Monitoring

Deer Lakes Park is a County Park that is heavily utilized by the local community. Community members have become concerned over recent plans to drill and frack horizontally under the park from adjacent well pads located on private property. The Air Quality Program established a passive monitoring location in the park to measure possible air quality impacts, with the first sample being initiated on June 4, 2014. Passive samplers are exposed for consecutive 14 day periods and then analyzed by a contracted laboratory for benzene, toluene, ethyl benzene, xylene, naphthalene, styrene, n-hexane and nitrogen dioxide. Additional passive air monitoring sites may be considered for installation at or around Deer Lakes Park and near other Marcellus shale drilling sites in the future. A study report with current results may be viewed on the Air Quality Program website at: http://www.achd.net/shale/pubs/041515_Deer_Lakes_data.pdf

(2.4) New Special Studies

(2.4.1) Air Toxics Study In Communities Downwind of the Neville Island Industrial Area

The communities downwind of Neville Island are a consistent source of citizen complaints due to industrial odors, and citizen and environmental groups have expressed concerns about potential health effects due to exposure to air toxics. In response, an air toxics monitoring campaign was initiated on February 4, 2015 with eight samplers being operated in communities including Belleview, Ben Avon, Avalon, Emsworth and Brighton Heights. Passive samplers at each site are exposed for 14 day periods and are analyzed by a contracted laboratory for benzene, toluene, ethyl benzene, xylene, naphthalene, styrene and n-hexane. This study will continue for at least one year from the start date. Additionally, five citizen volunteers will participate in a supplemental sampling campaign to measure one hour peak concentrations during odor episodes using SUMMA canisters with TO-15 analysis for over 61 individual VOC's. This equipment and the associated analysis will be provided by EPA's Fort Meade laboratory in Maryland. This portion of the study is expected to consist of a total of 10 samples collected during July and August 2015. An ongoing study report with current results may be viewed on the Air Quality Program website at: http://www.achd.net/neville/monitoring.html

(3) PROPOSED CHANGES TO THE AIR MONITORING NETWORK

(3.1) Monitor Additions

(3.1.1) Parkway East Near Road Monitoring Site $PM_{2.5}$ Monitor

The Department plans to install a continuous $PM_{2.5}$ FEM monitor at the Parkway East near road monitoring site during 2015. This monitor is currently undergoing the purchasing process. Installation will begin as soon as possible after it is received.

(3.2) Monitor Reductions

(3.2.1) Monroeville PM_{10} Monitor

The Department proposes to discontinue the Monroeville continuous PM_{10} monitor during 2015. This monitor was originally activated to assess mobile particulate emissions. The newer Parkway East near road monitoring site is much better suited to this task due to conformance to siting criteria outlined in the NO_2 Near Road Monitoring Technical Assistance Document. The Monroeville continuous PM_{10} monitor will remain in operation until the continuous $PM_{2.5}$ monitor is activated at the near road station.

(3.2.2) North Braddock filter based PM_{10}

The Department proposes to discontinue filter based PM_{10} sampling at the North Braddock monitoring site during 2015. This includes a primary high volume, every six day PM_{10} sampler and a secondary quality assurance high volume PM_{10} sampler. The Department will continue to operate the continuous PM_{10} sampler at this site, which has proven to correlate well with the filter based samplers.

(4) AIR MONITORING NETWORK SUMMARY INTRODUCTION

Table 4 is provided as an overview of the air monitoring network, and is presented here to show at a glance the numbers and general types of air monitors currently maintained by the Air Quality Program. To view live and recent data for all continuous monitors listed in the table, see the Air Quality Program website;

http://www.achd.net/air/air.html

A series of maps are provided to provide spatial orientation of the monitoring network, organized by individual criteria pollutants. Each map also includes significant air pollution sources.

(Figure 4.1) Locations of all fixed air monitoring sites in Allegheny County

(Figure 4.2) Sulfur dioxide monitors

(Figure 4.3) Carbon monoxide monitors

(Figure 4.4) Nitrogen dioxide monitors

(Figure 4.5) Ozone monitors

(Figure 4.6) PM_{10} monitors

(Figure 4.7) $PM_{2.5}$ monitors

(Figure 4.8) Lead monitors

(Figure 4.9) Meteorological Sensors

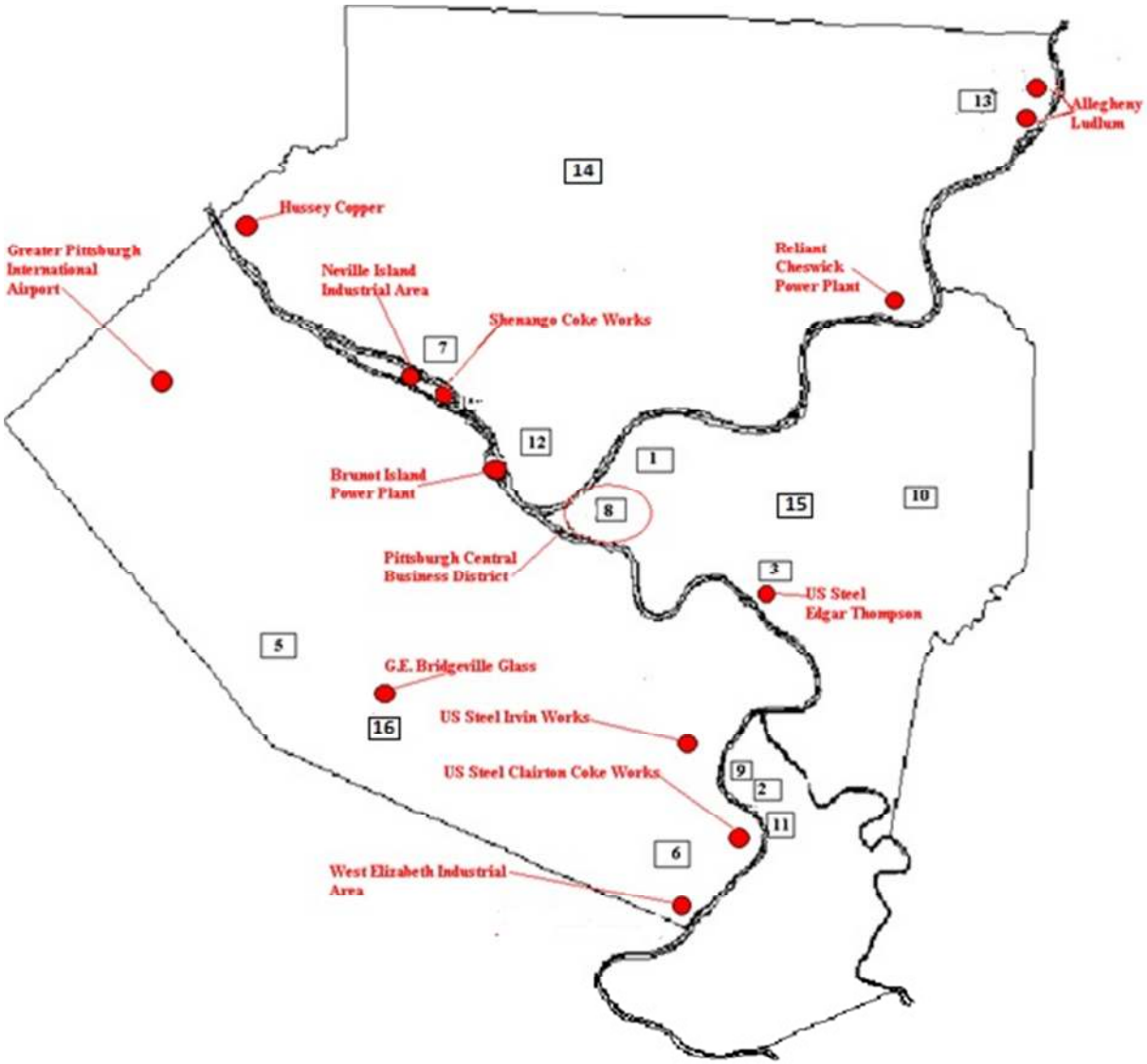
(Table 4) AIR MONITORING NETWORK SUMMARY

	SO_2	CO	NO_2	NO_y	O_3	PM_{10}	$PM_{2.5}$	PM coarse	Pb	H_2S	Air Toxic	Met
Lawrenceville	CT	CT		CT	C		C I(1), IQA(6) SPC(3)	C	I(6), IQA(6)		M	Sonic RH, AT
Liberty	C					C I(3), IQA(6)	C I(1), IQA(6) SPC(6)			C	Ch(3) B(a)P	Sonic AT
North Braddock	C					C I(6) IQA(6)	I(3)					Sonic AT
South Fayette	C				CS	I(6)	I(3)				B(a)P	Sonic AT
Clairton						I(6)	I(6)					
Avalon	C					I(6)	I(3), C			C	Ch(6) B(a)P	Sonic AT
Flag Plaza		C				C					T15(6) T11(6)	
Glassport High Street						C						
Lincoln						C	C					
Pittsburgh 8 (Manchester)						I(6)						
Harrison			C		C		I(3)					
North Park							I(6)					
Bridgeville									I(3)			
Monroeville						C						
Parkway East Near Road		CT	CT				C				BC	Sonic RH, AT
	SO_2	CO	NO_2	NOy	O_3	PM_{10}	$PM_{2.5}$	PM coarse	Pb	H_2S	Air Toxic	Met
Total	C = 4 CT = 1	C = 1 CT = 2	C = 1 CT=1	CT = 1	C = 2 CS = 1	C = 6 I = 6 IQA=2	C =4 I = 8 IQA = 2 SPC=2	C = 1	I = 2 IQA= 1	C = 2	I = 8	C = 6

CHART KEY

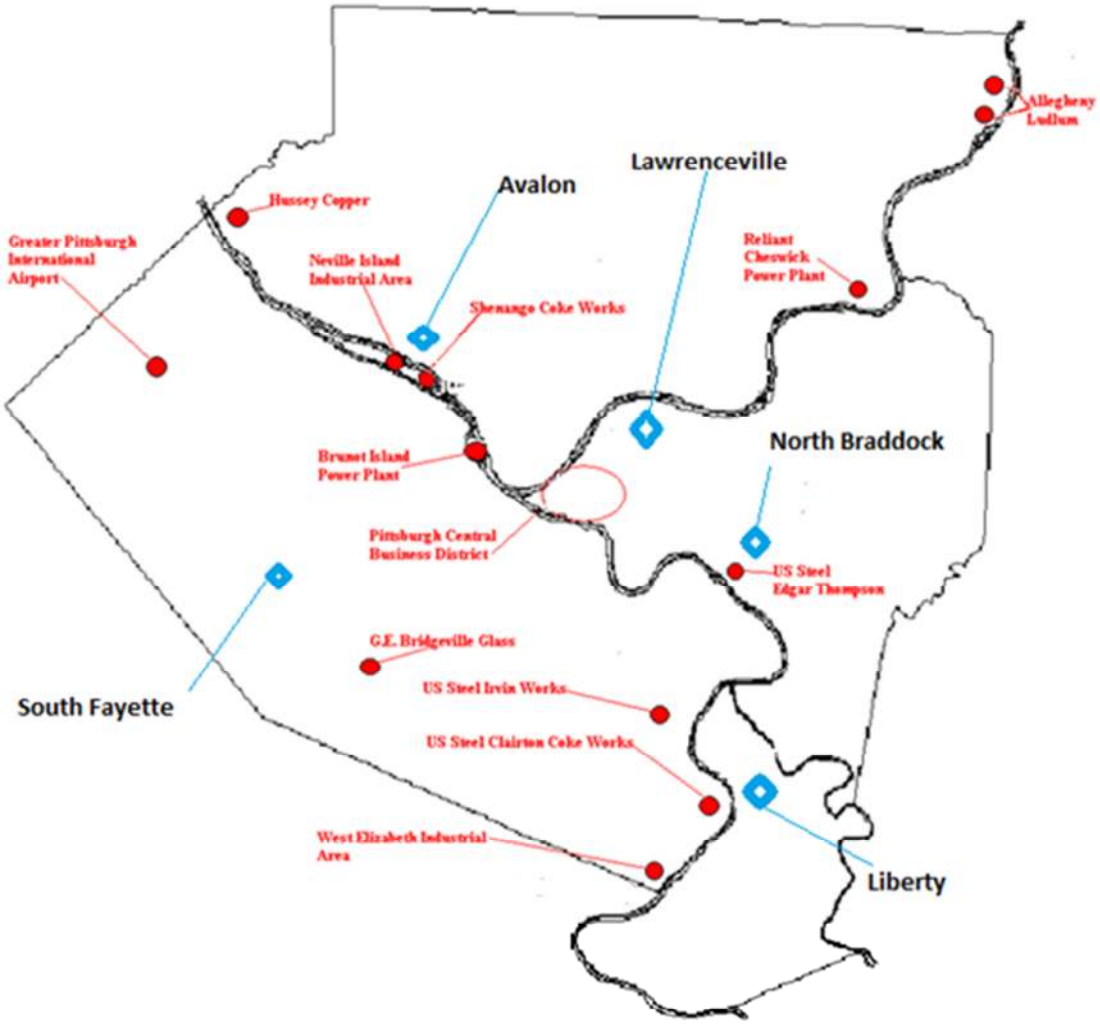
C = Continuous **I** = Intermittent or Filter-Based **SPC** = PM2.5 Speciation **S** = Seasonal Monitor
T = Trace Level Monitor **(1), (3), or (6)** = Sampling Frequency [for example, **(3)** means every third day]
Ch = Charcoal Tube **T15** = SUMMA TO15 **T11** = Carbonyl TO11 **BC** = Black Carbon (Aethalometer)
M = HAP Metals by TSP / Analyzed by WV DEP **RH**=Relative Humidity **AT**= Ambient Temperature
Green Shading = Planned Monitors, Not Yet Operational **IQA** = Intermittent Collocated QA monitor
Red Shading = Candidate for Discontinuation **B(a)P** = Benzoalphapyrene (see page 10 for details)

(Figure 4.1) Stationary Air Pollution Sources and Air Monitoring Sites

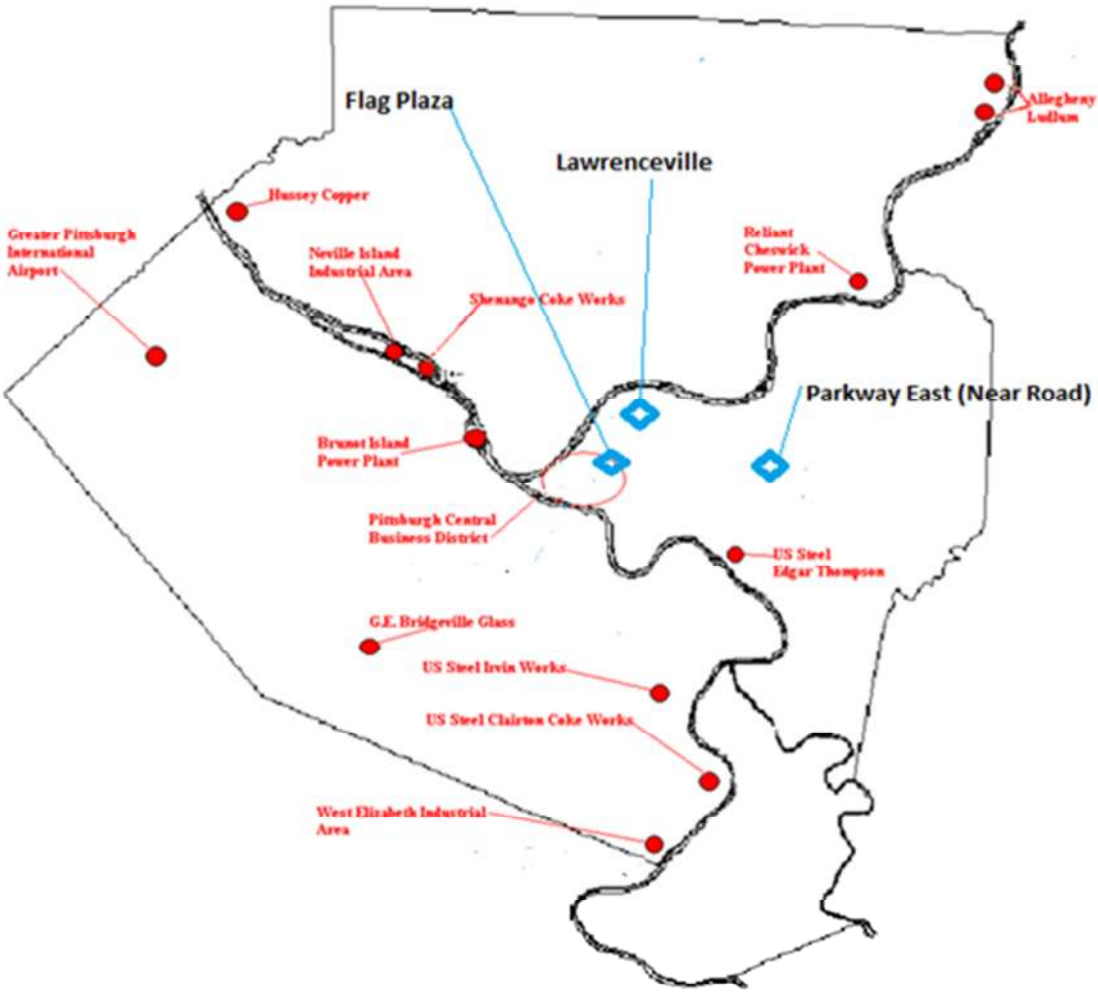


Site Number	Monitoring Site Name	Site Number	Monitoring Site Name
1	Lawrenceville	9	Glassport High Street
2	Liberty	10	Monroeville
3	North Braddock	11	Lincoln
4	Harrison	12	Pittsburgh 8
5	South Fayette	13	Harrison
6	Clairton	14	North Park
7	Avalon	15	Parkway East Near Road
8	Flag Plaza	16	Bridgeville Lead Monitor

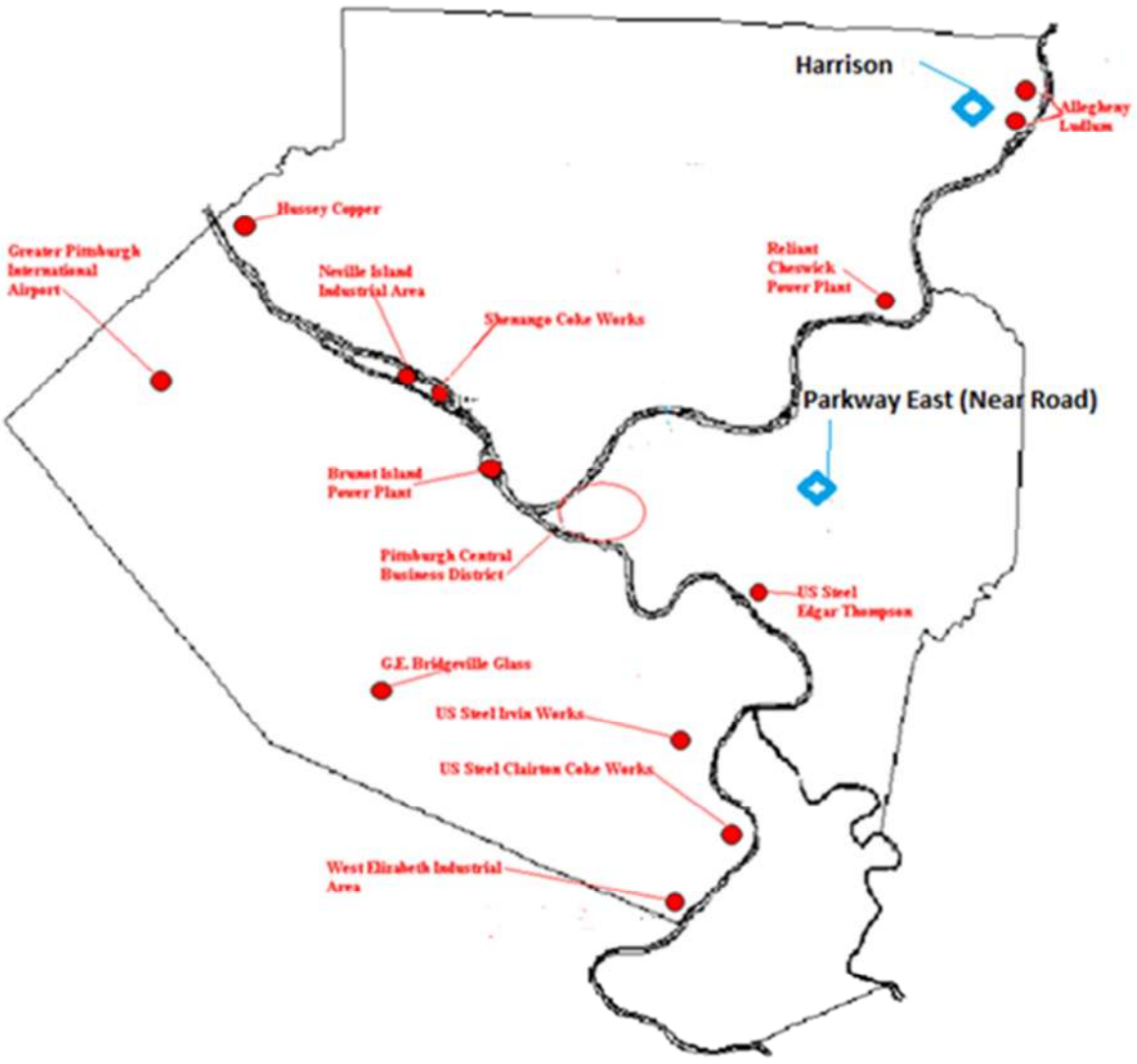
(Figure 4.2) <u>2015 Sulfur Dioxide Monitors</u>



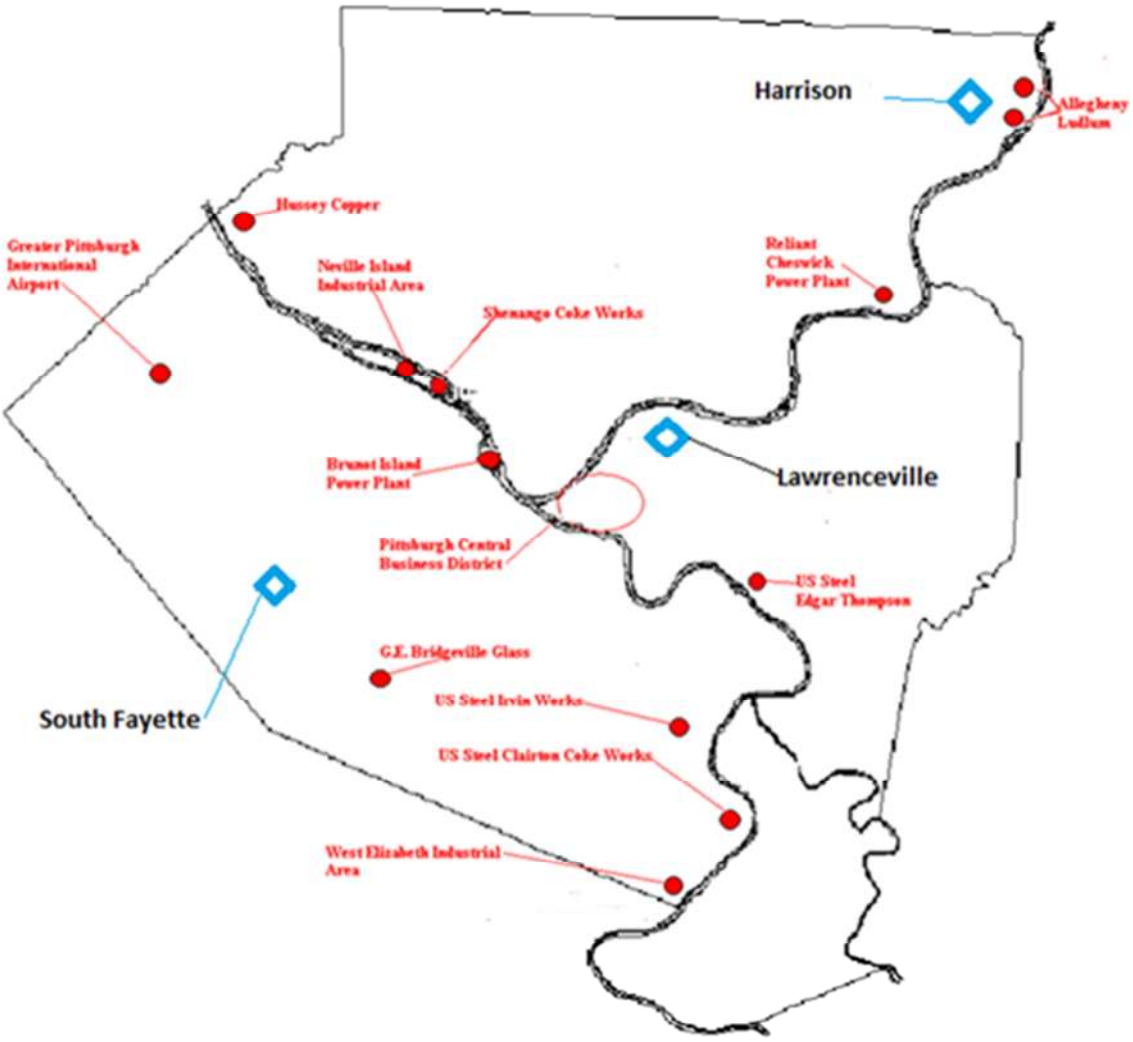
(Figure 4.3) <u>2015 Carbon Monoxide Monitors</u>



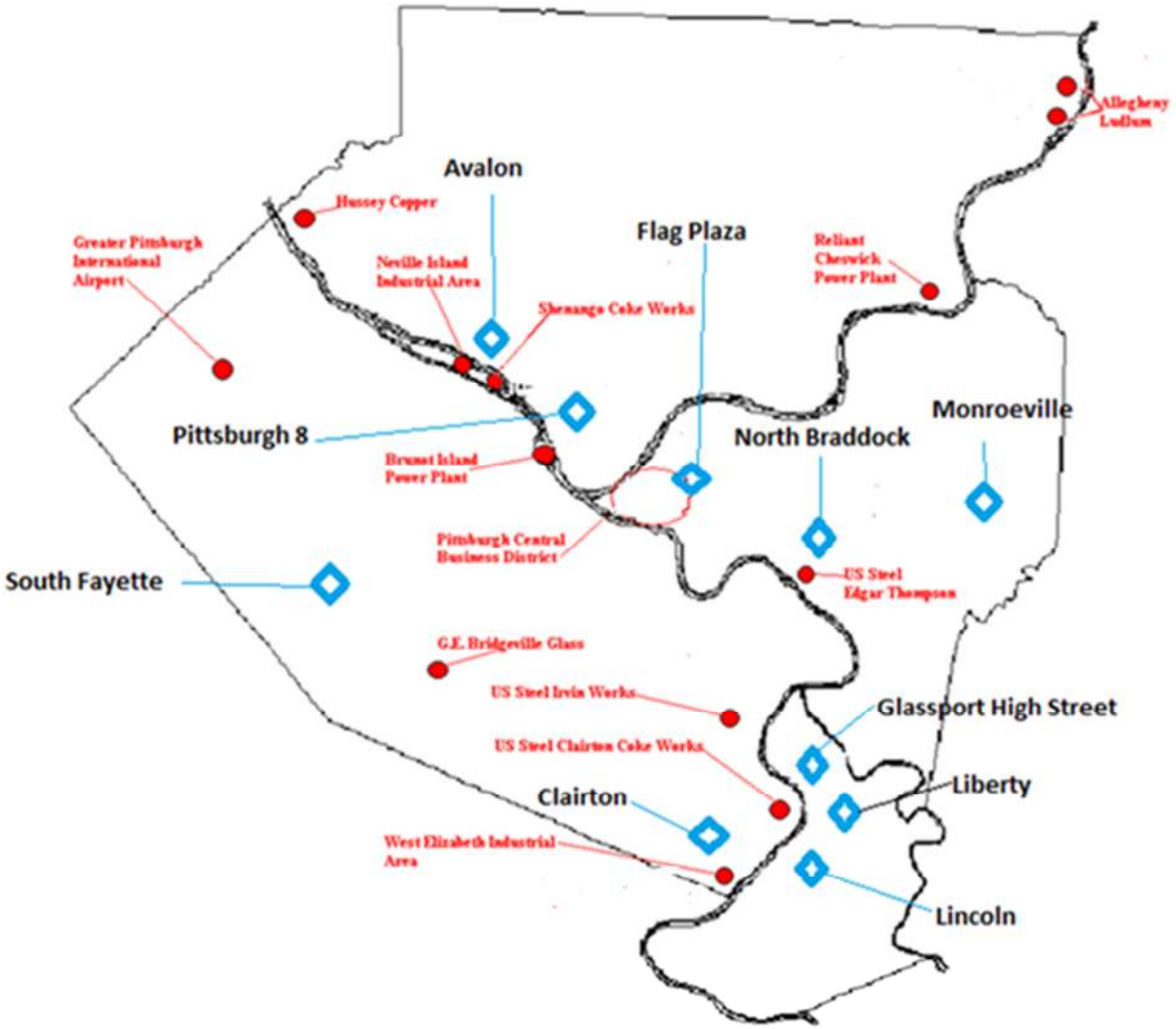
(Figure 4.4) <u>2015 Nitrogen Dioxide Monitors</u>



(Figure 4.5) 2015 Ozone Monitors

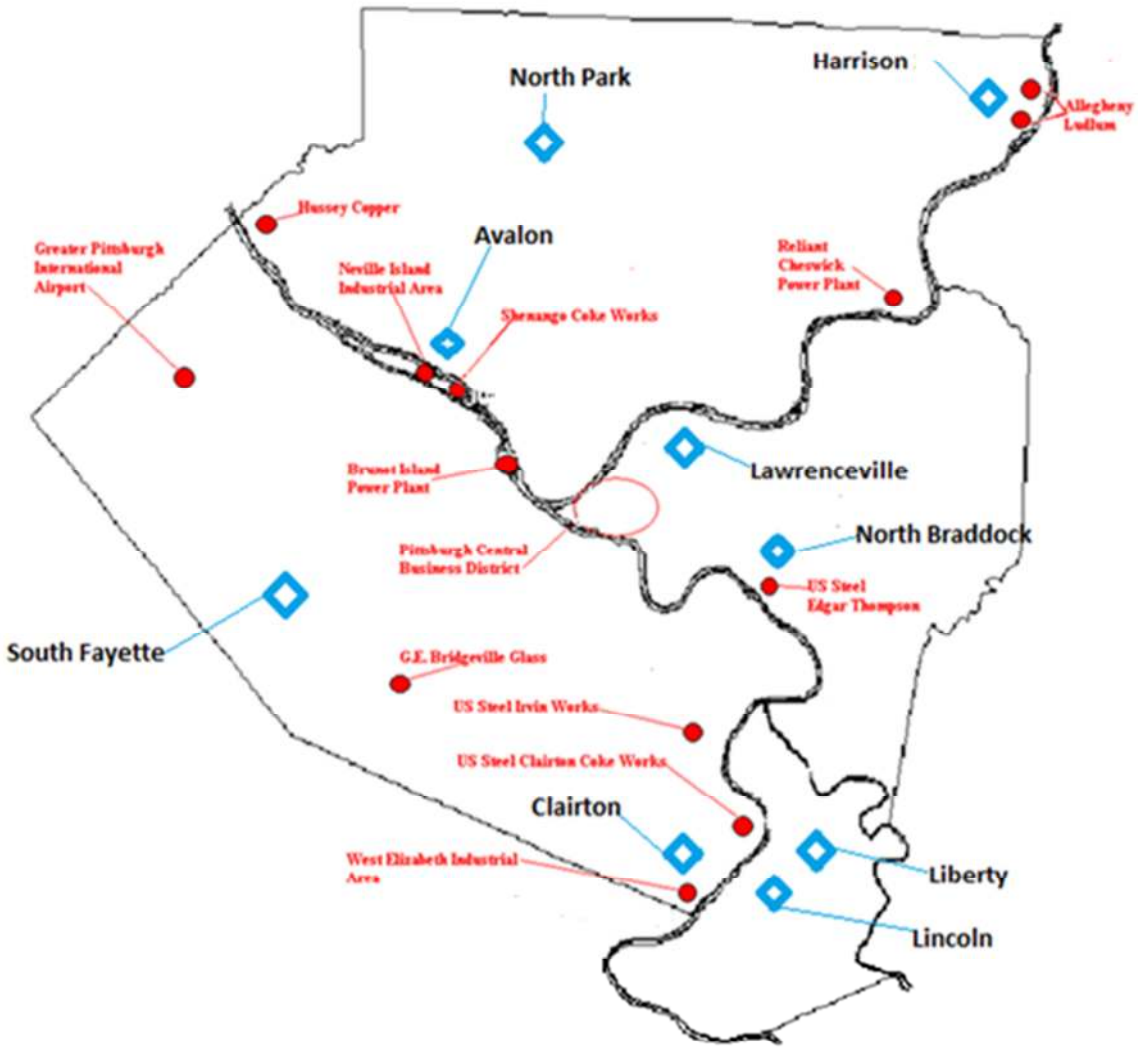


(Figure 4.6) 2015 PM_{10} Monitors



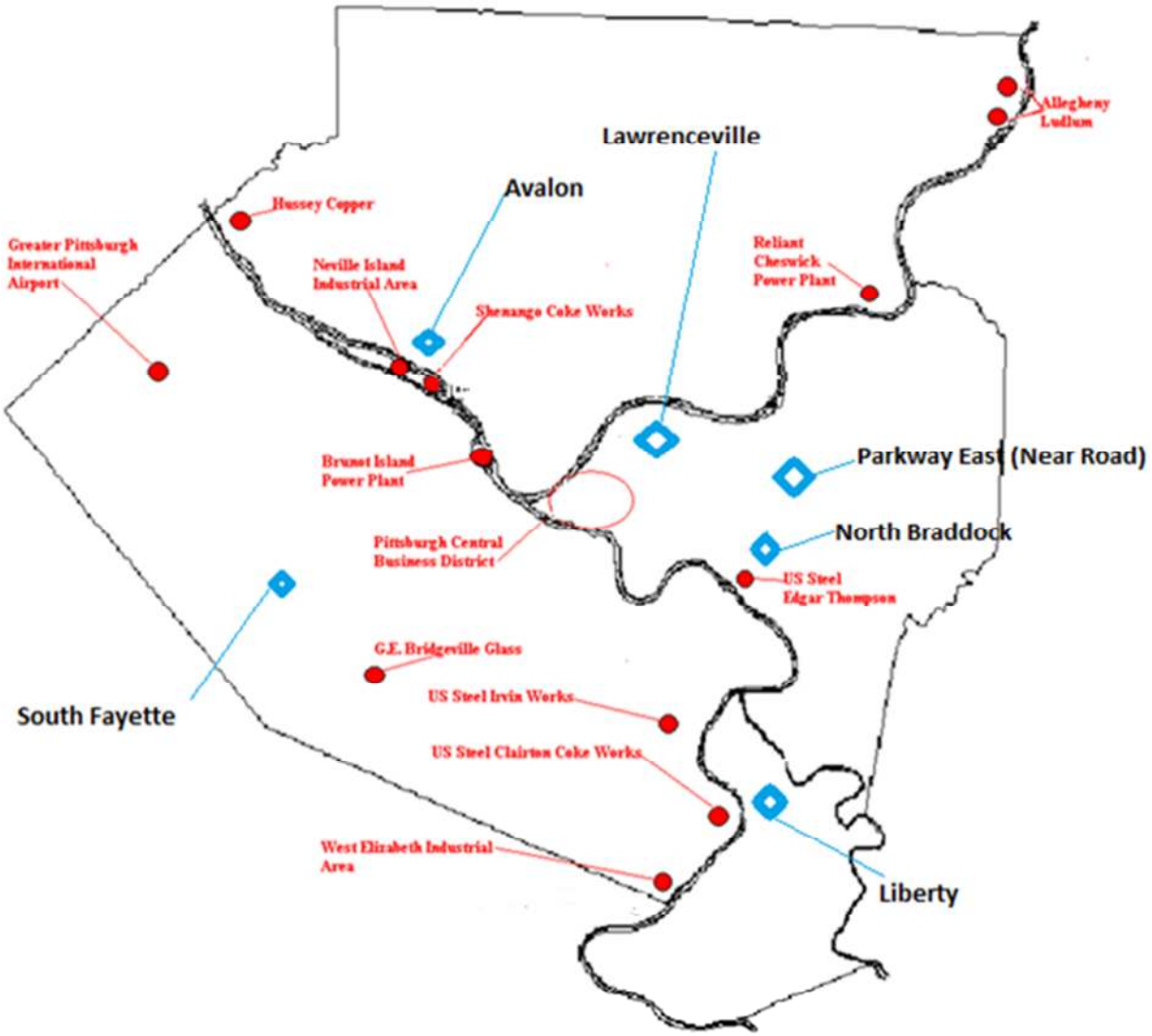
Note: The Monroeville PM_{10} monitor is proposed for discontinuation in this network review. See page 6 for details.

(Figure 4.7) 2015 $PM_{2.5}$ Monitors



(Figure 4.8) 2015 Lead Monitors

(4.9) 2015 Meteorological Sensors



(5) GLOSSARY OF TERMS AND ABBREVIATIONS

NAAQS	National Ambient Air Quality Standards. These standards apply only to the six criteria pollutants
Criteria Pollutants	Air pollutants considered harmful to public health and the environment (carbon monoxide, nitrogen dioxide, sulfur dioxide, ozone, lead, particulate matter PM_{10}, $PM_{2.5}$)
FRM	Federal Reference Method. Primary measurement methods designated by the USEPA for measurement of criteria pollutants and determination of compliance with NAAQS.
FEM	Federal Equivalent Method. Secondary methods approved by the USEPA for measurement of criteria pollutants and determination of compliance with NAAQS.
Hourly	Refers to continuous operating monitors which produce hourly averaged telemetered data.
TSP	Total suspended particulates. This pollutant is measured using the high volume sampler operated without a size selective inlet.
PM_{10}	All suspended particles equal to or smaller than 10 microns.
$PM_{2.5}$	All suspended particles equal to or smaller than 2.5 microns. Also frequently referred to as fine particulates.
$PM_{(coarse)}$	All suspended particulates smaller than10 microns but larger than 2.5 microns, also often referred to as **$PM_{10-2.5}$**. EPA has not assigned a NAAQS to this parameter as of the date of this document.
Lead (Pb)	Lead Monitor. Data is obtained by County laboratory analysis of TSP filters. This analysis measures lead that is trapped in suspended particles and is performed according to the federal reference method for lead monitoring.
Speciation	$PM_{2.5}$ speciation monitor. Multiple filter based samples which yield a breakdown of $PM_{2.5}$ composition. Analytes include heavy metals, sulfates, nitrates and various species of carbon. Analysis is conducted by the US EPA national contract lab, known as Research Triangle Institute, which is located in North Carolina.
HAP Metals (TSP)	Analysis of special quartz TSP filter samples for metals considered hazardous air pollutants as specified by the EPA implemented toxic metals study. Samples are collected every six days and are analyzed by the Guthrie Laboratory, operated by the West Virginia Department of Environmental Protection.
B(a)P	Benzoalphapyrene. Data is obtained by Allegheny County laboratory analysis of high volume PM_{10} quartz filters, a highly carcinogenic airborne pollutant known to be a byproduct of coke production.
Aethalometer	A continuous monitor designed to measure diesel mobile emissions by quantifying black carbon particles. This is a research instrument and does not measure EPA criteria pollutants.

GLOSSARY OF TERMS AND ABBREVIATIONS (continued)

Benzene C_6H_6. A six carbon aromatic ring known to be a potent carcinogen. Emitted by mobile and industrial sources in Allegheny County.

SUMMA Canister Samples collected for 24 hours every six days using an evacuated stainless steel canister. Analysis for multiple volatile organic compounds is performed by Maryland Department of Environmental Protection.

Carbonyl Samples collected for 24 hours every six days. Sample media is a DNPH cartridge. Analysis by method TO-11a is performed by the Philadelphia Health Department for formaldehyde and other related carbonyl compounds.

WINS WINS Impactor. Used by the $PM_{2.5}$ reference method sampler to accomplish the final size cut to $PM_{2.5}$ and below. This device is placed in the sample stream and requires the use of a special designated, low volatility, silicon based oil in the impactor well.

VSCC Very Sharp Cut Cyclone. An alternate particulate sizing device approved by the EPA for use with $PM_{2.5}$ FRM and FEM monitors. The VSCC is commonly used to accomplish the final $PM_{2.5}$ size cut in continuous particulate monitors. The VSCC features longer service intervals and does not require the use of oil.

CO Carbon Monoxide. Measured using a continuous automated analyzer.

SO_2 Sulfur Dioxide. Measured using a continuous automated analyzer.

NO_x Oxides of nitrogen, including nitric oxide and nitrogen dioxide. Measured using a continuous automated analyzer.

NO_y Total reactive nitrogen. A collective name for oxidized forms of nitrogen in the atmosphere such as nitric oxide (NO), nitrogen dioxide (NO_2), nitric acid (HNO_3), and numerous short lived and reactive organic nitrates, but **not** NH_3. These compounds play important roles in atmospheric ozone and ultra-fine particle formation.

O_3 Ozone. Measured using a continuous automated analyzer.

H_2S Hydrogen Sulfide. Measured using a continuous automated analyzer.

NCORE National Core Monitoring Network, consisting of multi-pollutant ambient air monitoring sites, and specializing in $PM_{2.5}$ and associated precursor gases.

SPM Special Purpose Monitor. Monitor not used for comparison against NAAQS. SPM's may be employed for short term studies. Monitors not approved as EPA reference or equivalent methods must be operated as SPM monitors.

TEOM (Tapered Element Oscillating Microbalance) this technology is used by the Thermo Scientific model 1400ab continuous particulate monitor, which has FEM designation for PM_{10} measurement. This monitor is also used as a $PM_{2.5}$ SPM by adding a VSCC.

BAM (Beta Attenuation Monitor) this technology is used by the Met One BAM1020 continuous particulate monitor, which has FEM designation for PM_{10} measurement, and for $PM_{2.5}$ with the addition of a VSCC.

(6) AIR MONITORING NETWORK DESCRIPTION INTRODUCTION

The following air monitoring network description discusses each monitoring site in detail. The first information block is labeled with the site name. Inside of the block is listed site specific information as follows:

- **Street Address**
- **AQS #** - unique 9 digit number used to identify the site in the national data base.
- **Municipality** where site is located.
- **MSA**- Metropolitan Statistical Area.
- **Elevation**- Feet above mean sea level.
- **Latitude (N), Longitude (W)** – Site coordinates, given in WGS84 datum coordinates as taken from Google Earth.
- **Comments**- Specific site information of importance.

The next blocks are designed to list details of each monitor at the site. Each monitor present at the time of the review is assigned its own block. The following information is listed:

Sensor Type – The name of the pollutant measured by the sampler.

Sensor Network Designation – The name of the designated network:

- SLAMS - State or Local Ambient Monitoring Station
- STN – $PM_{2.5}$ Speciation Trends Network
- SPM – Special Purpose Monitor
- NATTS- National Air Toxics Trends Site
- NCORE – National Core Multi-pollutant Monitoring
- QA CO-LOCATED – Quality Assurance Duplicate Monitoring

Sensor Purpose Description– The purpose of the sensor:

- Population Exposure, such as the Air Quality Index
- Regulatory Compliance with Federal or State regulation
- Research/Scientific Monitoring
- Specific Location Characterization
- Quality Assurance (Collocated)

Sample Frequency – Specifies how often a sample is taken.

- Continuous - operates 24/7; applies predominately to gaseous analyzers, although some particulate samplers (TEOM, BAM) operate continuously.
- Daily – a discrete sample is taken every day; applies to manual method particulate samplers.
- Every Third Day - Manual method particulate samplers that run every third day.
- Every Sixth Day – Manual method particulate samplers that run every sixth day.

Appendix A QA Assessment – A "**YES**" indicates the sensor is maintained in accordance with the Quality Assurance (QA) requirements specified in 40 CFR Part 58 Appendix A.

Appendix C Monitoring Classification – Each ambient air monitor is classified using the EPA "List of Designated Reference and Equivalent Methods"

- Reference Method – a method of sampling that is specified in 40 CFR Part 50.
- Equivalent Method – a method that is designated as equivalent to the reference method, in accordance with 40 CFR Part 53.
- Automated – after sampling, the analysis results are available immediately.
- Manual - after sampling, a separate analysis at a laboratory is necessary.
- N/A – appears where there is no reference or equivalent method.

Appendix C Monitoring Method – Each ambient air monitor is classified by a specific "method number." These numbers can be found in the EPA "List of Designated Reference and Equivalent Methods"

For detailed descriptions of each method number listed in this review, please follow the link below to access the EPA's Technology Transfer Network (file size 492 kb).

http://www.epa.gov/ttn/amtic/files/ambient/criteria/reference-equivalent-methods-list.pdf

Monitoring Method Description – Each individual ambient air monitor type has a specific method of pollutant detection. Common examples are:

- Ozone monitors – Ultraviolet (UV) Absorption
- SO_2- UV Fluorescence
- CO - Non-dispersive Infrared (IR)
- NO_2, NO_x and NO_y - Chemiluminescence
- $PM_{2.5}$, PM_{10} - Gravimetric (gravimetric by TEOM tapered element microbalance, beta particle attenuation by BAM)
- Aethalometer – Continuous monitor that uses light attenuation and a specific wavelength (880 nm) to quantify diesel mobile emissions as black carbon particles and at an additional wavelength (370 nm) to differentiate and subtract positive signals from aromatic organic compounds such as those found in biomass burning, cooking and tobacco smoke. The aethalometer located at the Parkway East near road monitoring site is equipped with an inlet that excludes all particles larger than 2.5 microns.

Appendix D Design Criteria – Appendix D requires a certain number of samplers per geographic area. A "**YES**" indicates that the number of monitors in that particular area meets or exceeds the requirement of 40 CFR Part 58 Appendix D.

Appendix D Scale – The specific "spatial scales of representation" describes the physical dimensions of the air parcel around the monitoring station throughout which actual pollutant concentrations are reasonably similar.

- Microscale - Areas ranging from several meters to about 100 meters
- Middle scale - Areas ranging from 100 meters to 0.5 kilometers
- Neighborhood - 0.5 to 4.0 kilometers, and uniform land use
- Urban scale - 4 to 50 kilometers, and
- Regional - ten to hundreds of kilometers

Appendix D Objective – Describes the purpose/objective for monitoring at a site.

- Extreme Downwind
- General/Background Concentration
- Highest Concentration
- Maximum Ozone Concentration
- Maximum Precursor Emissions
- Population Exposure
- Regional Transport
- Source Oriented
- Quality Assurance
- Welfare Related

Appendix E Siting Criteria – Describes certain criteria applicable to ambient air quality sampling probes and monitoring paths, such as distances from trees, obstructions, traffic lanes, etc. A "**YES**" indicates that the sensor at the given site meets or exceeds the requirements of 40 CFR Part 58 Appendix E.

(7) Detailed Air Monitoring Site Tables

(7.1) Lawrenceville

Address	Allegheny County Health Department 301 39th Street Pittsburgh, PA		
AQS#	42-003-0008	MSA	Pittsburgh
Municipality	Pittsburgh	Elevation	280 m
Latitude (N)	40°27'55.56	Longitude (W)	79°57'38.67
Established	03/01/1966	Probe Height	12 m
Comments	This is a population-based, community oriented monitoring site that is located in an urban area, downwind of Central Business District. The Lawrenceville monitoring site was selected as a $PM_{2.5}$ National Trends Site, and later as an NCORE site. The most significant local pollution is generated from mobile sources, but light industry scattered throughout the area is also a contributing factor. Lawrenceville is a core $PM_{2.5}$ site that is used to determine compliance with national standards.		

Sensor Type	**Ozone**	Appendix C Method Code	EQOA-0809-187
Network Designation	SLAMS	Method Description	UV Absorption
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	N/A
Network Designation	SPM	Method Description	TEOM (non-equivalent)
Purpose	Population Exposure	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	N/A	Appendix E Siting Criteria	Yes

Lawrenceville, Continued

Sensor Type	**$PM_{10-2.5}$ (coarse)**	Appendix C Method Code	EQPM-0709-185
Network Designation	NCORE / SPM	Method Description	Beta Attenuation Monitors
Purpose	Research/Scientific Monitoring	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method for PM coarse monitoring	Appendix E Siting Criteria	Yes

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	RFPS-0498-118
Network Designation	SLAMS	Method Description	Gravimetric
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Daily	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	RFPS-0498-118
Network Designation	SLAMS	Method Description	Gravimetric
Purpose	QA/Co-located Monitor	Appendix D Design Criteria	Yes
Sample Frequency	Every six days	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure / Quality Assurance
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Sensor Type	**$PM_{2.5}$ Speciation**	Appendix C Method Code	N/A (Met One SASS +URG3000n)
Network Designation	CSN	Method Description	Gravimetric
Purpose	Research/Scientific Monitoring	Appendix D Design Criteria	Yes
Sample Frequency	Every Three Days	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Appendix C Classification	N/A	Appendix E Siting Criteria	Yes

Lawrenceville, Continued

Sensor Type	**Carbon Monoxide Trace Level**	Appendix C Method Code	RFCA-1093-093
Network Designation	NCORE	Method Description	Non-dispersive Infrared
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Appendix C Classification	Automated Reference Method	Appendix E Siting Criteria	Yes

Sensor Type	**Sulfur Dioxide Trace Level**	Appendix C Method Code	EQSA-0495-100
Network Designation	NCORE	Method Description	UV-Fluorescence
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Appendix C Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

Sensor Type	**Total Oxides of Nitrogen (NO_y)Trace Level**	Appendix C Method Code	N/A T-API 200EU/501NO_y
Network Designation	NCORE / SPM	Method Description	Chemiluminescence
Purpose	Research/Scientific Monitoring	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Appendix C Classification	N/A	Appendix E Siting Criteria	Yes

Lawrenceville, Continued

Sensor Type	**Lead (Pb)**	Appendix C Method Code	EQLA-0813-803
Network Designation	SLAMS	Method Description	Gravimetric and Lead analysis
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Manual Reference Method 40 CFR Part 50, Appendix G	Appendix E Siting Criteria	Yes

Sensor Type	**Lead (Pb)**	Appendix C Method Code	EQLA-0813-803
Network Designation	SLAMS	Method Description	Gravimetric and Lead analysis
Purpose	QA/Co-located Monitor	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure / Quality Assurance
Monitor Classification	Manual Reference Method 40 CFR Part 50, Appendix G	Appendix E Siting Criteria	Yes

Sensor Type	**TSP / HAP Metals**	Appendix C Method Code	N/A
Network Designation	SPM	Method Description	Gravimetric and Metals Analysis By W Va. DEP's Laboratory
Purpose	Research/Scientific Monitoring	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	N/A	Appendix E Siting Criteria	Yes

(7.1.1) Lawrenceville Area Information

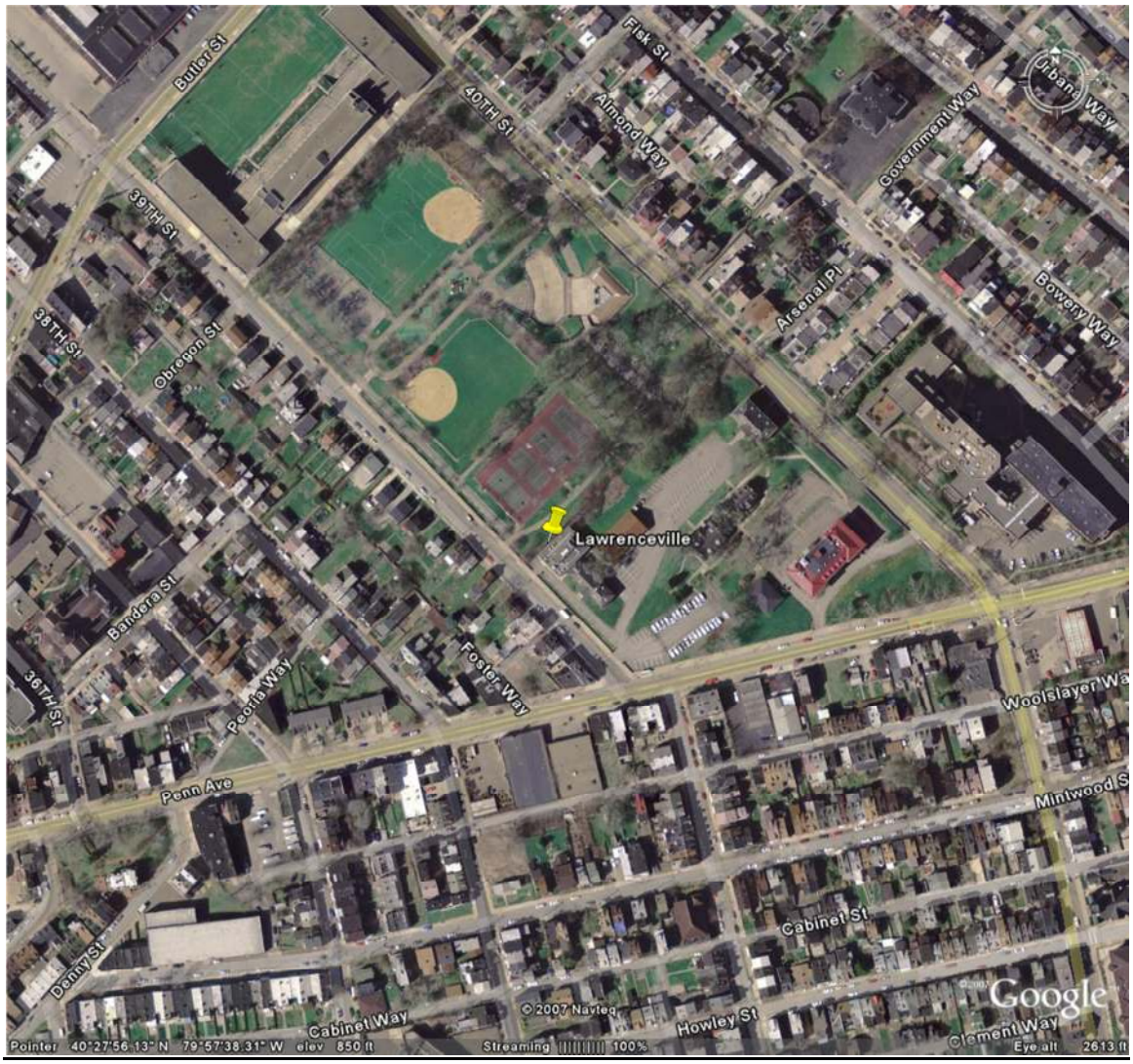
Street Name	Traffic Count (Vehicles/day)
39th Street (20 m)	Unavailable
Penn Avenue (86 m)	13,000
Butler Street (343 m)	14,799

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Residential
East	Residential
South	Residential
West	Residential

Direction	Obstructions	Height (m)	Distance (m)
North			
East			
South	Wall	1	2 to 3 m
West			

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North		Flat
East		Flat
South		Flat
West		Flat

(Figure 7.1) Lawrenceville Location Map



(7.2) Liberty

Address	South Allegheny High School 2743 Washington Blvd McKeesport, PA		
AQS#	42-003-0064	MSA	Pittsburgh
Municipality	Liberty	Elevation	335 m
Latitude (N)	40°19'25.88	Longitude (W)	79°52'5.03
Established	10/01/1969	Probe Height	4 m
Comments	This site is population oriented but is also about 3 km downwind of the US Steel Clairton Coke Works, which is a major source of particulate matter and precursor gases as well as sulfur dioxide and air toxics. The area around this monitoring site has a long history of higher than average levels of $PM_{2.5}$, PM_{10} and sulfur dioxide. Significant ambient levels of benzene have also been measured and documented at this site. Liberty is a core $PM_{2.5}$ site that is used to determine compliance with national standards. At the request of US Steel, telemetry devices have been installed on the PM_{10}, $PM_{2.5}$, SO_2, H_2S monitors that transmit continuous readings via radio signals to a location within the US Steel facility. Other transmitters are also in use at Lincoln PM_{10} and $PM_{2.5}$ monitors (site # 7.3), Glassport High Street PM10 monitor (site # 7.4) and North Braddock SO_2 monitor and sonic anemometer. This real-time data allows US Steel to minimize fugitive emissions and to adjust production levels to keep particulate levels and gaseous emissions within allowable ambient levels in downwind communities.		

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	N/A
Network Designation	SPM	Method Description	TEOM (non-equivalent)
Purpose	Population Exposure	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	N/A	Appendix E Siting Criteria	Yes

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	RFPS-0498-118
Network Designation	SLAMS	Method Description	Gravimetric
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Daily	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Liberty, Continued

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	RFPS-0498-118
Network Designation	SLAMS	Method Description	Gravimetric
Purpose	QA/Co-located Monitor	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Quality Assurance
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Sensor Type	**PM_{10}**	Appendix C Method Code	EQPM-1090-079
Network Designation	SLAMS	Method Description	TEOM
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

Sensor Type	**PM_{10}**	Appendix C Method Code	RFPS-0202-141
Network Designation	SLAMS	Method Description	Gravimetric and B(a)P analysis
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Every Three Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Sensor Type	**PM_{10}**	Appendix C Method Code	RFPS-0202-141
Network Designation	SLAMS	Method Description	Gravimetric and B(a)P analysis
Purpose	QA/Co-located Monitor	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure / Quality Assurance
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Liberty, Continued

Sensor Type	**Sulfur Dioxide**	Appendix C Method Code	EQSA-0495-100
Network Designation	SLAMS	Method Description	UV-Fluorescence
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

Sensor Type	**$PM_{2.5}$ Speciation**	Appendix C Method Code	N/A (Met One SASS +URG3000n)
Network Designation	CSN	Method Description	Gravimetric
Purpose	Research/Scientific Monitoring	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Appendix C Classification	N/A	Appendix E Siting Criteria	Yes

Sensor Type	**Hydrogen Sulfide**	Appendix C Method Code	N/A
Network Designation	SPM	Method Description	EQSA-0495-100 with converter
Purpose	Population Exposure	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	N/A	Appendix E Siting Criteria	Yes

Sensor Type	**Charcoal Tube (BTEX, Naphthalene)**	Appendix C Method Code	N/A
Network Designation	SPM	Method Description	Sorbent Tube / Lab Analysis
Purpose	Population Exposure	Appendix D Design Criteria	Yes
Sample Frequency	Every Three Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	N/A	Appendix E Siting Criteria	Yes

(7.2.1) Liberty Area Information

Street Name	Traffic Count (Vehicles/day)
Washington Blvd. (283 m)	2800

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Residential
East	Residential
South	Residential
West	Residential

Direction	Obstructions	Height (m)	Distance (m)
North			
East			
South			
West			

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North	valley	Rolling
East		Rolling
South	valley	Rolling
West		Rolling

(Figure 7.2) Liberty Location Map

(7.3) Lincoln

Address	Bellbridge Road Lincoln, PA		
AQS#	42-003-7004	MSA	Pittsburgh
Municipality	Lincoln	Elevation	346 m
Latitude (N)	40°18'29.80	Longitude (W)	79°52'8.77
Established	09/15/1992	Probe Height	3 m
Comments	Located at an elevated location, directly across the Monongahela River and downwind from the US Steel Clairton Coke Works. Although this area is not populated, it is upwind of populated areas and it is modeled to be the maximum impact area of air emissions from the plant. At the request of US Steel, telemetry devices have been installed on the PM_{10} and $PM_{2.5}$ monitors that transmit continuous readings via radio signals to a location within the US Steel facility. This real-time data allows US Steel to minimize fugitive emissions and to adjust production levels to keep particulate levels and gaseous emissions within allowable ambient levels in downwind communities.		

Sensor Type	**PM_{10}**	Appendix C Method Code	EQPM-1090-079
Network Designation	SLAMS	Method Description	TEOM
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Middle
Appendix A QA Assessment	Yes	Appendix D Objectives	Highest Concentration
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	N/A
Network Designation	SPM	Method Description	TEOM (non-equivalent)
Purpose	Population Exposure	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	N/A	Appendix E Siting Criteria	Yes

(7.3.1) Lincoln Area Information

Street Name	Traffic Count (Vehicles/day)
Lincoln Blvd. (238 m)	6900
Bellbridge Rd. (428 m)	2754

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Residential
East	Residential
South	Industrial
West	Industrial

Direction	Obstructions	Height (m)	Distance (m)
North			
East			
South			
West			

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North	Valley	Rolling
East	Valley	Rolling
South	Hills	Rough
West	River	Rough

(Figure 7.3) Lincoln Location Map

(7.4) Glassport High Street

Address	Water Tower on High Street Glassport, PA		
AQS#	42-003-3006	MSA	Pittsburgh
Municipality	Glassport	Elevation	366 m
Latitude (N)	40°19'33.67	Longitude (W)	79°52'54.29
Established	04/30/1991	Probe Height	1.5 m
Comments	Located in a residential area, this site is population oriented, and is impacted by the US Steel Clairton Coke Works, the Irvin Works and other sources in the Monongahela river valley. Glassport High Street is the site of the County's last documented exceedance of the federal 24-hour PM_{10} standard of 150 ug/m^3 (October of 1997). At the request of US Steel, a telemetry device has been installed on the PM_{10} monitor that transmits continuous readings via radio signals to a location within the US Steel facility. This real-time data allows US Steel to minimize fugitive emissions and to adjust production levels to keep particulate levels and gaseous emissions within allowable ambient levels in downwind communities.		

Sensor Type	**PM_{10}**	Appendix C Method Code	EQPM-1090-079
Network Designation	SLAMS	Method Description	TEOM
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

(7.4.1) Glassport High Street Area Information

Street Name	Traffic Count (Vehicles/day)
High Street (8m)	Unavailable
Scenic Street (53m)	Unavailable
Washington Blvd (140m)	2800
Naoami Ave. (202m)	4458

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Residential
East	Residential
South	Residential
West	Residential

Direction	Obstructions	Height (m)	Distance (m)
North	Water Tower	25	9
East			
South			
West			

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North		Flat
East		Flat
South		Flat
West		Flat

(Figure 7.4) Glassport High Street Location Map

(Figure 7.4.1) Liberty, Lincoln and Glassport High Street Location Map

(7.5) North Braddock

Address	North Braddock Borough Building 600 Anderson Street Braddock, PA		
AQS#	42-003-1301	MSA	Pittsburgh
Municipality	North Braddock	Elevation	270 m
Latitude (N)	40°24'8.16	Longitude (W)	79°51'39.39
Established	01/01/1973	Probe Height	5 m
Comments	This site is population oriented and it is located within an urban environmental justice area. The population around this site is impacted by the US Steel Edgar Thomson Works, which is a large steel production facility, and is located about 1.5 km away from the monitoring site. North Braddock is a core $PM_{2.5}$ site that is used to determine compliance with national standards. At the request of US Steel, telemetry devices have been installed on the PM_{10} and SO_2 monitors as well as the sonic anemometer. Continuous data is transmitted via radio signals to a location within the US Steel facility. This real-time data allows US Steel to minimize fugitive emissions and to adjust production levels to keep particulate levels and gaseous emissions within allowable ambient levels in downwind communities.		

1

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	RFPS-0498-188
Network Designation	SLAMS	Method Description	Gravimetric
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Every Three Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Sensor Type	**PM_{10}**	Appendix C Method Code	RFPS-0202-141
Network Designation	SLAMS	Method Description	Gravimetric and B(a)P analysis
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

North Braddock, Continued

Sensor Type	**PM_{10}**	Appendix C Method Code	RFPS-0202-141
Network Designation	SLAMS	Method Description	Gravimetric
Purpose	QA/Co-located Monitor	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure / Quality Assurance
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Sensor Type	**PM_{10}**	Appendix C Method Code	EQPM-0798-122
Network Designation	SLAMS	Method Description	Beta Attenuation Monitor
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

Sensor Type	**Sulfur Dioxide**	Appendix C Method Code	EQSA-0495-100
Network Designation	SLAMS	Method Description	UV-Fluorescence
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

(7.5.1) North Braddock Area Information

Street Name	Traffic Count (Vehicles/day)
Bell Avenue (13 m)	3242
Anderson St. (40 m)	4455
Braddock Ave. (370 m)	11,436

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Residential
East	Residential
South	Residential, Industry
West	Residential

Direction	Obstructions	Height (m)	Distance (m)
North			
East			
South			
West			

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North	Hills	Rolling
East	Hills	Rolling
South	River	Rolling
West		Rolling

(Figure 7.5) North Braddock Location Map

(7.6) Harrison

Address	Highlands Senior High School Pacific & Idaho Streets Natrona, PA		
AQS#	42-003-1008	MSA	Pittsburgh
Municipality	Harrison Township	Elevation	1020 feet above MSL
Latitude (N)	40°36'49.91	Longitude (W)	79°43'46.45
Established	01/01/1999	Probe Height	5.5 m
Comments	This site is population-based and community oriented. Harrison is a core $PM_{2.5}$ site that is used to determine compliance with national standards. Harrison is also an important ozone monitoring site that is positioned downwind of the Pittsburgh Central Business District.		

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	RFPS-0498-118
Network Designation	SLAMS	Method Description	Gravimetric
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Every Three Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Sensor Type	**Ozone**	Appendix C Method Code	EQOA-0880-047
Network Designation	SLAMS	Method Description	UV Absorption
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	No

Harrison, Continued

Sensor Type	**Oxides of Nitrogen**	Appendix C Method Code	RFCA-1093-093
Network Designation	SLAMS	Method Description	Chemiluminescence
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Reference Method	Appendix E Siting Criteria	No

(7.6.1) Harrison Area Information

Street Name / Distance	Traffic Count (Vehicles/day)
Idaho Ave (31m)	Unavailable
Pacific Ave (103m)	4458

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Residential
East	Residential
South	Residential
West	Industrial

Direction	Obstructions	Height (m)	Distance (m)
North	Wall	3	20
East			
South			
West			

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North		Flat
East		Flat
South	Valley	Rolling
West	Valley	Rolling

(Figure 7.6) Harrison Location Map

(7.7) South Fayette

Address	South Fayette Elementary School 2254 Old Oakdale Road McDonald, PA		
AQS#	42-003-0067	MSA	Pittsburgh
Municipality	McDonald	Elevation	390 m
Latitude (N)	40°22'32.33	Longitude (W)	80°10'11.75
Established	01/01/1973	Probe Height	5.5 m
Comments	This is a population-based, community oriented site that is the regional transport site for ozone and $PM_{2.5}$. Location in the western portion of the county makes this an excellent site to access pollution levels entering the County on prevailing winds. South Fayette is a core $PM_{2.5}$ site that is used to determine compliance with national standards.		

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	RFPS-0498-118
Network Designation	SLAMS	Method Description	Gravimetric
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Every Three Days	Appendix D Scale	Regional
Appendix A QA Assessment	Yes	Appendix D Objectives	General/Background, Regional Transport
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Sensor Type	**PM_{10}**	Appendix C Method Code	RFPS-0202-141
Network Designation	SLAMS	Method Description	Gravimetric and B(a)P analysis
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Regional
Appendix A QA Assessment	Yes	Appendix D Objectives	General/Background
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

South Fayette, Continued

Sensor Type	**Sulfur Dioxide**	Appendix C Method Code	EQSA-0486-060
Network Designation	SLAMS	Method Description	UV-Fluorescence
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Regional
Appendix A QA Assessment	Yes	Appendix D Objectives	General/Background
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

Sensor Type	**Ozone**	Appendix C Method Code	EQOA-0809-187
Network Designation	SLAMS	Method Description	UV Absorption
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Regional
Appendix A QA Assessment	Yes	Appendix D Objectives	General/Background, Regional Transport
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

(7.7.1) South Fayette Area Information

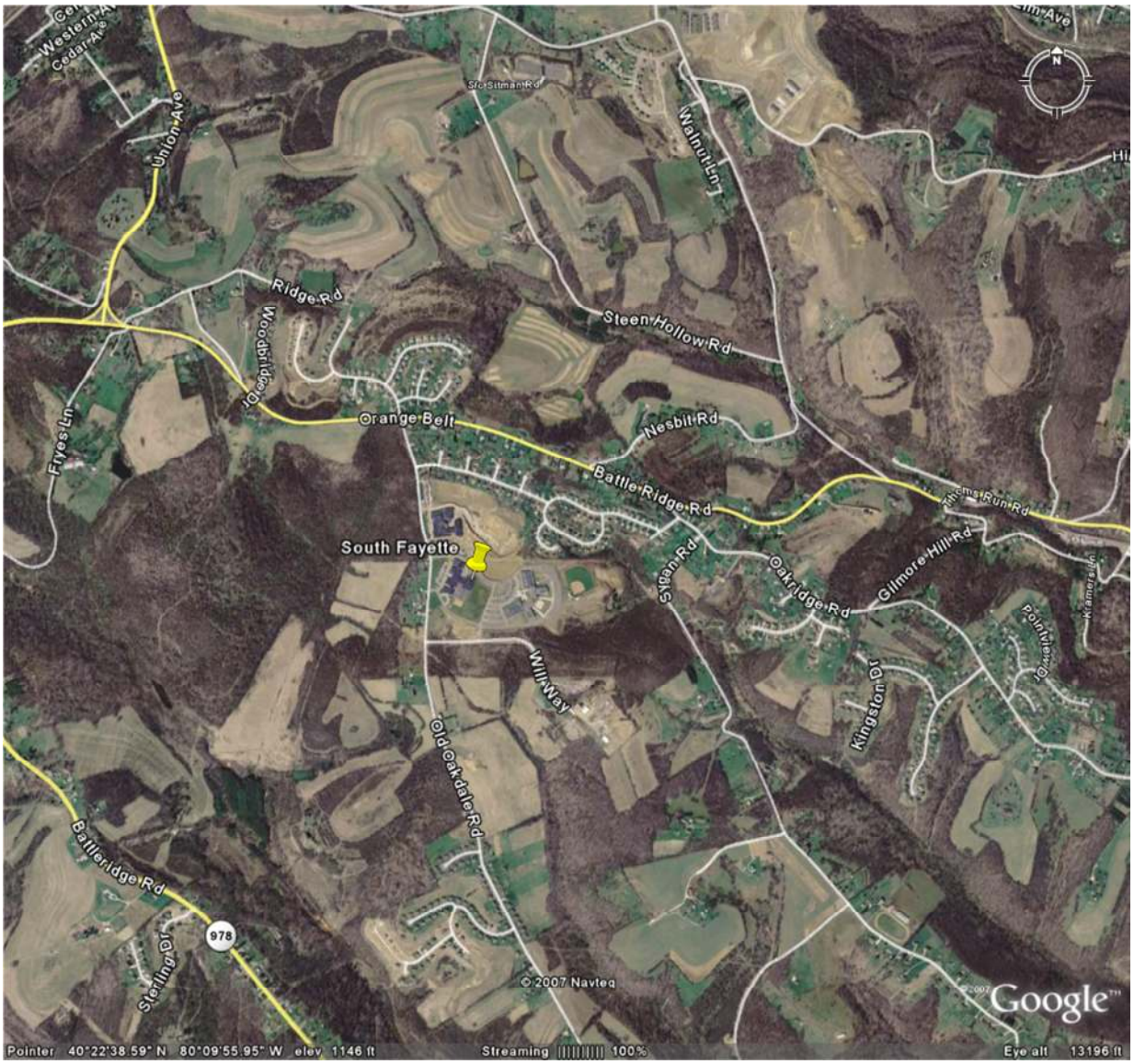
Street Name / Distance	Traffic Count (Vehicles/day)
Old Oakdale Rd. (142m)	Unavailable
Cannongate Dr. (377m)	Unavailable
Battle Ridge Rd. (554m)	2779

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Residential
East	Residential
South	Agriculture
West	Agriculture

Direction	Obstructions	Height (m)	Distance (m)
North			
East			
South			
West			

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North		Rolling
East		Rolling
South		Rolling
West		Rolling

(Figure 7.7) South Fayette Location Map



(7.8) Clairton

Address	Clairton Education Center 501 Waddel St, Clairton, PA		
AQS#	42-003-3007	MSA	Pittsburgh
Municipality	Clairton	Elevation	297 m
Latitude (N)	40°17'39.77	Longitude (W)	79°53'7.09
Established	04/08/1992	Probe Height	4.5 m
Comments	This is a population-oriented site that is located within an environmental justice area. Site selection was based on this location being on the edge of the Monongahela Valley, generally upwind of the Clairton Coke Works. During times of temperature inversions and anomalous wind direction, the Coke Works and other sources in the Monongahela River valley impact this site.		

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	RFPS-0498-118
Network Designation	SPM	Method Description	Gravimetric
Purpose	Population Exposure	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure, Welfare Concerns
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Sensor Type	**PM_{10}**	Appendix C Method Code	RFPS-0202-141
Network Designation	SLAMS	Method Description	Gravimetric and B(a)P analysis
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure, Welfare Concerns
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

(7.8.1) Clairton Area Information

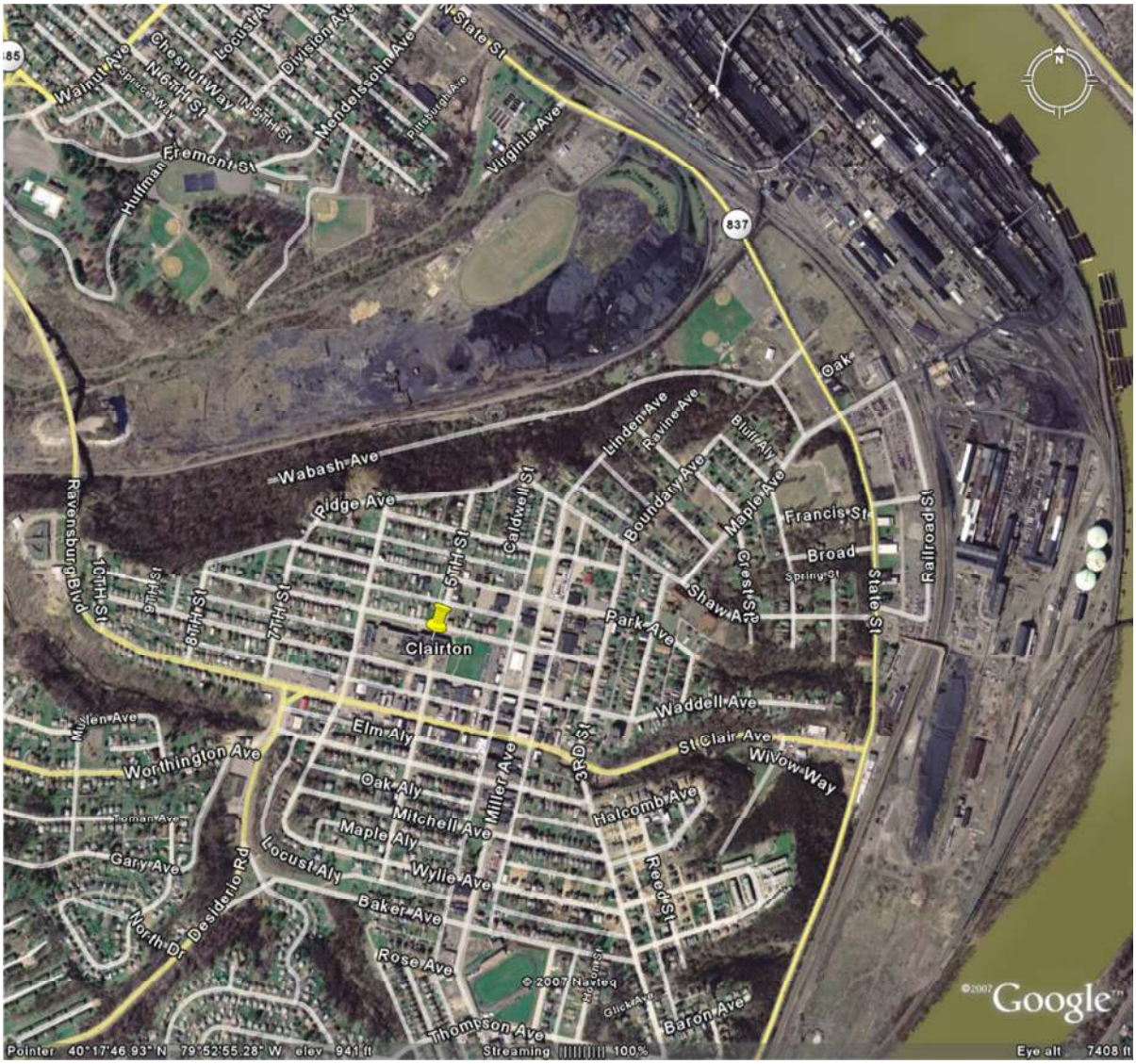
Street Name / Distance	Traffic Count (Vehicles/day)
Large Ave (29m)	Unavailable
Waddell Ave. (64m)	Unavailable
6th St. (144m)	Unavailable
Mullberry Alley (158m)	Unavailable

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Residential
East	Residential
South	Commercial
West	Residential

Direction	Obstructions	Height (m)	Distance (m)
North			
East			
South			
West			

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North	valley	rolling
East	valley	rolling
South		flat
West	valley	rolling

(Figure 7.8) Clairton Location Map



(7.9) Avalon

Address	530 Orchard Ave. Pittsburgh, PA		
AQS#	42-003-0002	MSA	Pittsburgh
Municipality	Avalon	Elevation	845 feet above MSL
Latitude (N)	40°29'59.24	Longitude (W)	80° 4'16.85
Established	02/01/1980	Probe Height	2.5 m
Comments	This site is population oriented and is impacted by sources on Neville Island, including Shenango Coke Works and Neville Chemical. Many air pollution and odor complaints received by the Department originate from the communities near this monitoring site. Avalon is a core PM2.5 site that is used to determine compliance with national standards.		

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	RFPS-0498-118
Network Designation	SLAMS	Method Description	Gravimetric
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Every Three Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	EQPM-0308-170
Network Designation	SPM	Method Description	Beta Attenuation Monitor
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

Avalon, Continued

Sensor Type	**PM_{10}**	Appendix C Method Code	RFPS-0202-141
Network Designation	SLAMS	Method Description	Gravimetric and B(a)P analysis
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

Sensor Type	**Sulfur Dioxide**	Appendix C Method Code	EQSA-0486-060
Network Designation	SLAMS	Method Description	UV-Fluorescence
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

Sensor Type	**Hydrogen Sulfide**	Appendix C Method Code	N/A
Network Designation	SPM	Method Description	EQSA-0486-060 with converter
Purpose	Population Exposure	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Hydrogen Sulfide	Appendix E Siting Criteria	Yes

Sensor Type	**Charcoal Tube (BTEX, Naphthalene**	Appendix C Method Code	N/A
Network Designation	SPM	Method Description	Sorbent Tube / Lab Analysis
Purpose	Population Exposure	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	N/A	Appendix E Siting Criteria	Yes

(7.9.1) Avalon Area Information

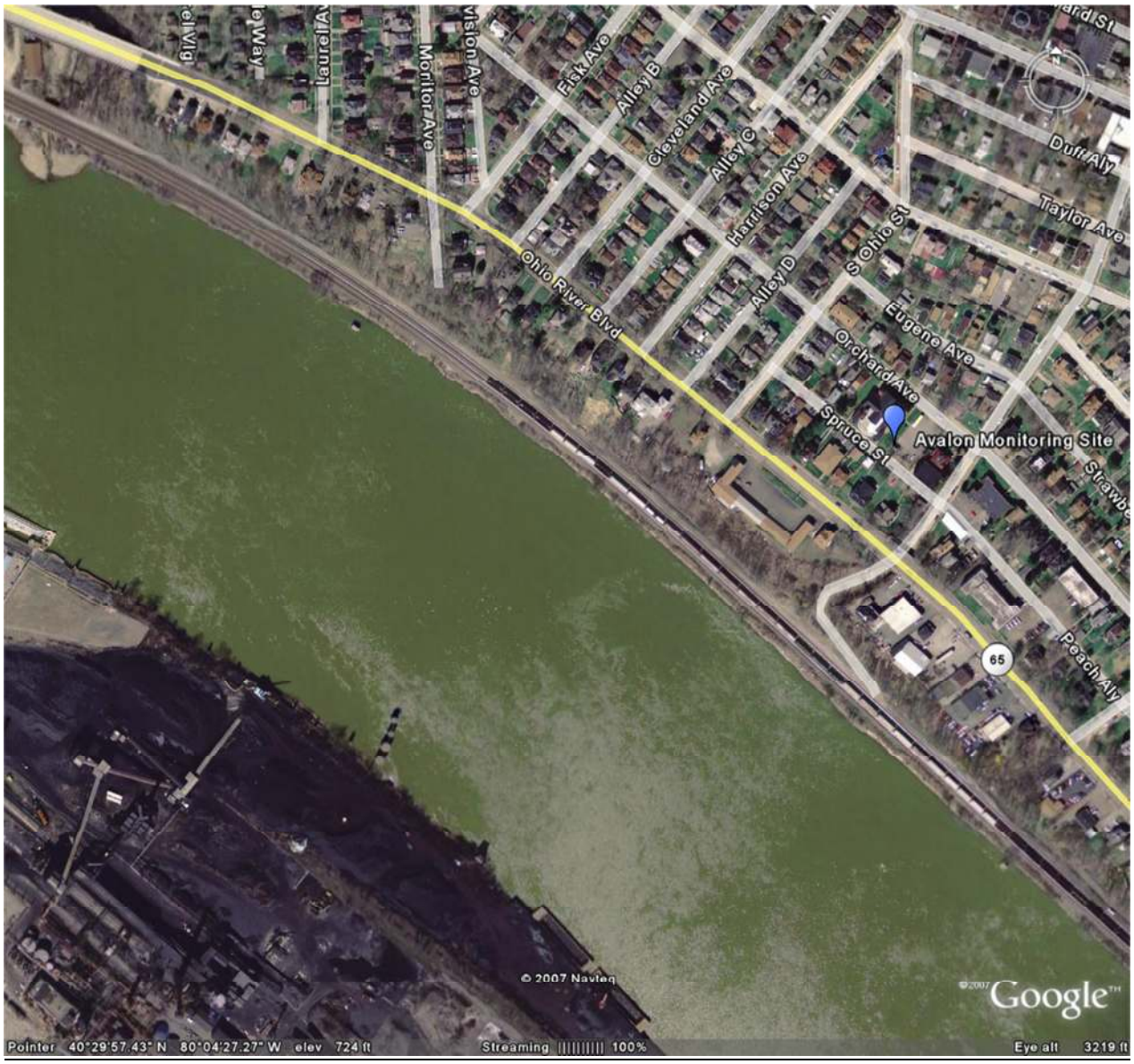
Street Name / Distance	Traffic Count (Vehicles/day)
Spruce St. (7m)	Unavailable
Orchard Ave. (33m)	Unavailable
South Birmingham Ave. (50m)	Unavailable
Ohio River Blvd. (59m)	10,360

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Residential
East	Residential
South	Commercial
West	Residential

Direction	Obstructions	Height (m)	Distance (m)
North	Building	2	30
East	Building	4	20
South	Building	3	43
West	Building	4	15

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North	Hill	Rolling
East		Flat
South	River	Flat
West		Flat

(Figure 7.9) Avalon Location Map



(7.10) Flag Plaza

Address	Boy Scouts of America Building 1275 Bedford Avenue Pittsburgh, PA		
AQS#	42-003-0031	MSA	Pittsburgh
Municipality	Pittsburgh	Elevation	277 m
Latitude (N)	40°26'36.30	Longitude (W)	79°59'25.27
Established	01/01/1980	Probe Height	4 m
Comments	This is an urban-based monitoring site that is located on the edge of Central Business District. In respect to prevailing winds, it is positioned downwind of Central Business District and upwind of a densely populated environmental justice area.		

Sensor Type	**PM_{10}**	Appendix C Method Code	EQPM-1090-079
Network Designation	SLAMS	Method Description	TEOM
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

Sensor Type	**Carbon Monoxide**	Appendix C Method Code	RFCA-1093-093
Network Designation	SLAMS	Method Description	Non-dispersive Infrared
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Reference Method	Appendix E Siting Criteria	Yes

Flag Plaza, Continued

Sensor Type	**Air Toxics**	Appendix C Method Code	N/A
Network Designation	SPM	Method Description	SUMMA canister, TO-15 analysis
Purpose	Population Exposure	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Manual SUMMA Canister Sampler	Appendix E Siting Criteria	Yes

Sensor Type	**Air Toxics**	Appendix C Method Code	N/A
Network Designation	SPM	Method Description	Carbonyl Cartridge, TO-11 analysis
Purpose	Population Exposure	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Manual Carbonyl Cartridge Sampler	Appendix E Siting Criteria	Yes

(7.10.1) Flag Plaza Area Information

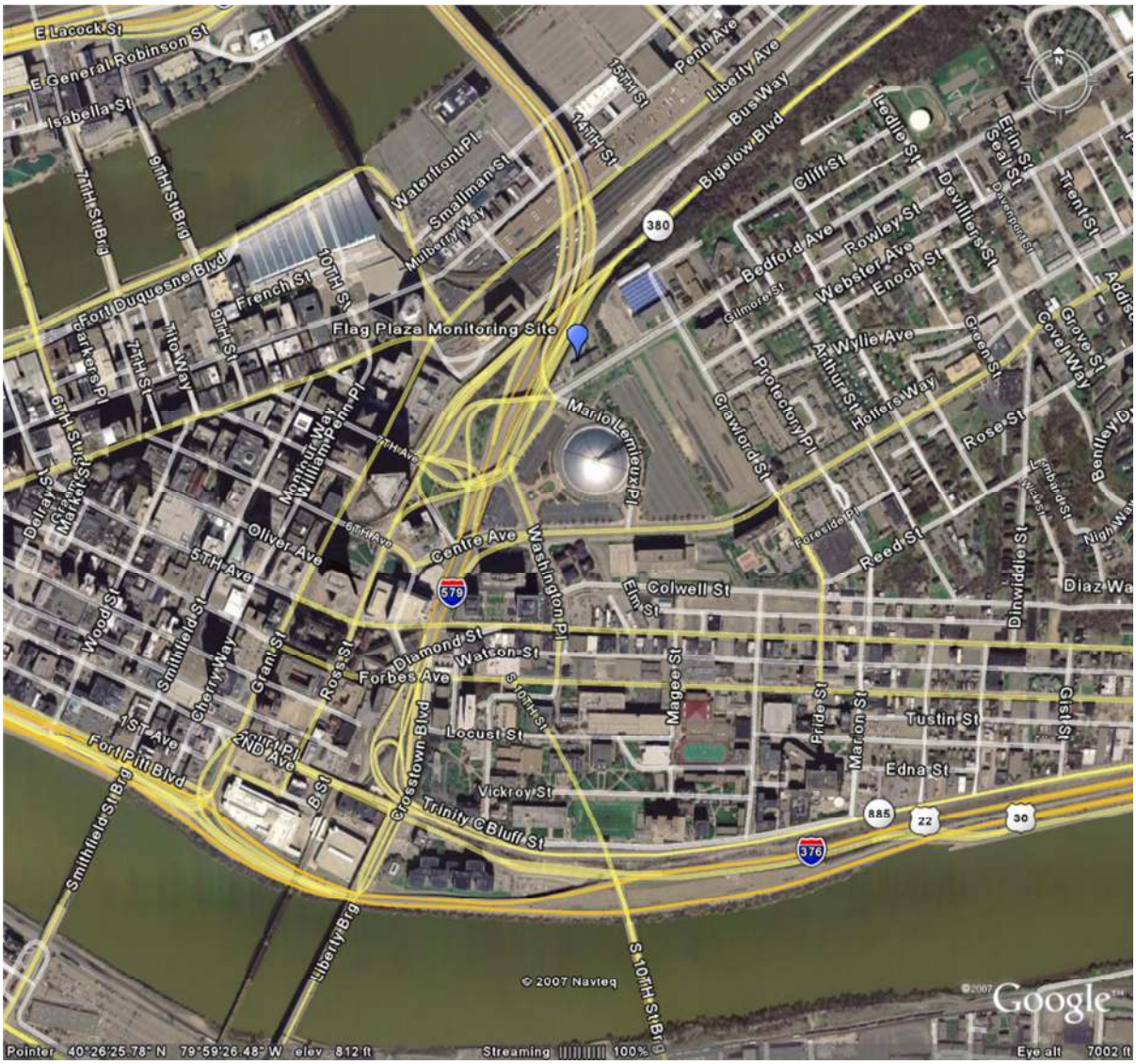
Street Name / Distance	Traffic Count (Vehicles/day)
Bedford Ave (17m)	9414
Rt. 579 (65m)	54,000
Rt. 380 (105m)	11,000

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Commercial
East	Residential
South	Commercial
West	Commercial

Direction	Obstructions	Height (m)	Distance (m)
North			
East			
South			
West	Building	5	130

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North	River	Flat
East	City	Flat
South	City	Flat
West	City	Flat

(Figure 7.10) Flag Plaza Location Map



(7.11) Pittsburgh 8 (Manchester School)

Address	Manchester Elementary School 1000 Fulton Street Pittsburgh, PA		
AQS#	42-003-0092	MSA	Pittsburgh
Municipality	Pittsburgh	Elevation	245 m
Latitude (N)	40°27'22.98	Longitude (W)	80° 1'35.10
Established	01/01/1981	Probe Height	4 m
Comments	Located to the northwest of downtown Pittsburgh, this site is population-based and community oriented. This is also an environmental justice area. Sources of influences are numerous, as this community is located near various warehouse/light-industrial facilities along Ohio River valley. There is also a significant contribution by mobile sources.		

Sensor Type	**PM_{10}**	Appendix C Method Code	RFPS-0202-141
Network Designation	SLAMS	Method Description	Gravimetric
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure, Welfare Concerns
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

(7.11.1) Pittsburgh 8 Area Information

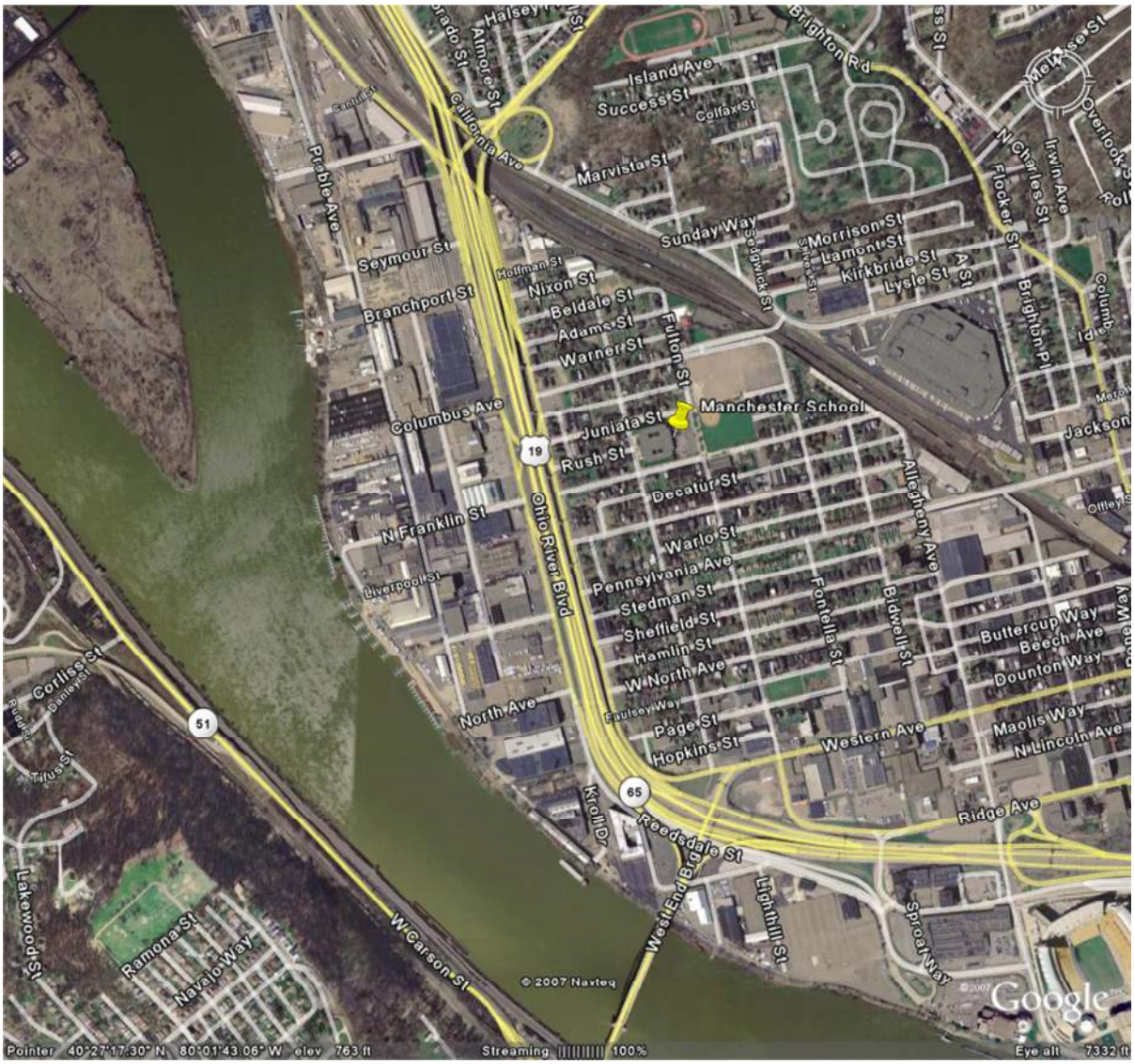
Street Name / Distance	Traffic Count (Vehicles/day)
Manhattan St (50m)	Unavailable
Chateau St (220m)	9000
Rt. 19 (253)	33,000

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Residential
East	Residential
South	Residential
West	Residential

Direction	Obstructions	Height (m)	Distance (m)
North			
East			
South			
West			

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North		Flat
East	Hills	Rolling
South		Flat
West	River	Flat

(Figure 7.11) Pittsburgh 8 (Manchester School) Location Map



(7.12) North Park

Address	Golf course clubhouse roof Kummer Road North Park, PA		
AQS#	42-003-0093	MSA	Pittsburgh
Municipality	North Park	Elevation	373 m
Latitude (N)	40°36'23.68	Longitude (W)	80° 1'16.47
Established	01/01/1983	Probe Height	3.5 m
Comments	Located in the less populated northern portion of the County, this site was created as a PM2.5 background site and also to provide for even geographical distribution of the PM2.5 monitoring network.		

Sensor Type	**$PM_{2.5}$**	Appendix C Method Code	RFPS-0498-118
Network Designation	SPM	Method Description	Gravimetric
Purpose	Population Exposure	Appendix D Design Criteria	Yes
Sample Frequency	Every Six Days	Appendix D Scale	Urban
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Manual Reference Method	Appendix E Siting Criteria	Yes

(7.12.1) North Park Area Information

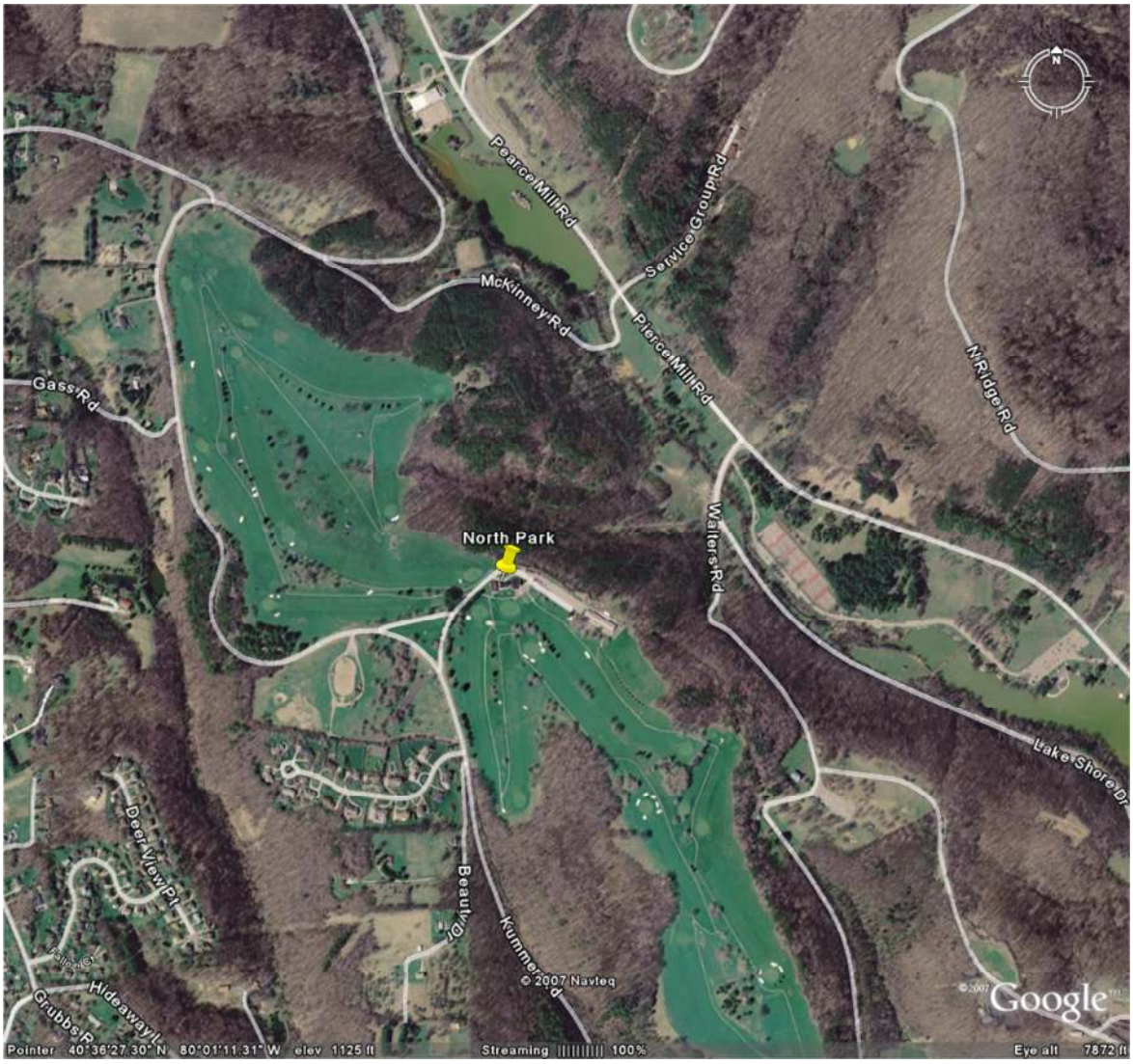
Street Name / Distance	Traffic Count (Vehicles/day)
Kummer Rd. (229m)	2850
Pearce Mill Rd. (580m)	2740

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Agriculture
East	Agriculture
South	Residential
West	Residential

Direction	Obstructions	Height (m)	Distance (m)
North			
East			
South			
West			

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North		Rolling
East		Rolling
South		Rolling
West		Rolling

(Figure 7.12) North Park Location Map



(7.13) Bridgeville

Address	1311 Union Street Bridgeville PA		
AQS#	42 003 0070	MSA	Pittsburgh
Municipality	Bridgeville	Elevation	251 m
Latitude (N)	40°21'46.77	Longitude (W)	80° 6'7.67
Established	01/01/2010	Probe Height	1.5 m
Comments	Established as a requirement of updated lead standards. Air Quality Program modeling showed this location to be close to the modeled lead hot spot due to impact by G.E. Bridgeville Glass Corp.		

Sensor Type	**Lead (Pb)**	Appendix C Method Code	EQLA-0813-803
Network Designation	SLAMS	Method Description	Gravimetric and Lead Analysis
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Every Three Days	Appendix D Scale	Microscale
Appendix A QA Assessment	Yes	Appendix D Objectives	Highest Concentration
Monitor Classification	Manual Reference Method 40 CFR Part 50, Appendix G	Appendix E Siting Criteria	Yes

(7.13.1) Bridgeville Area Information

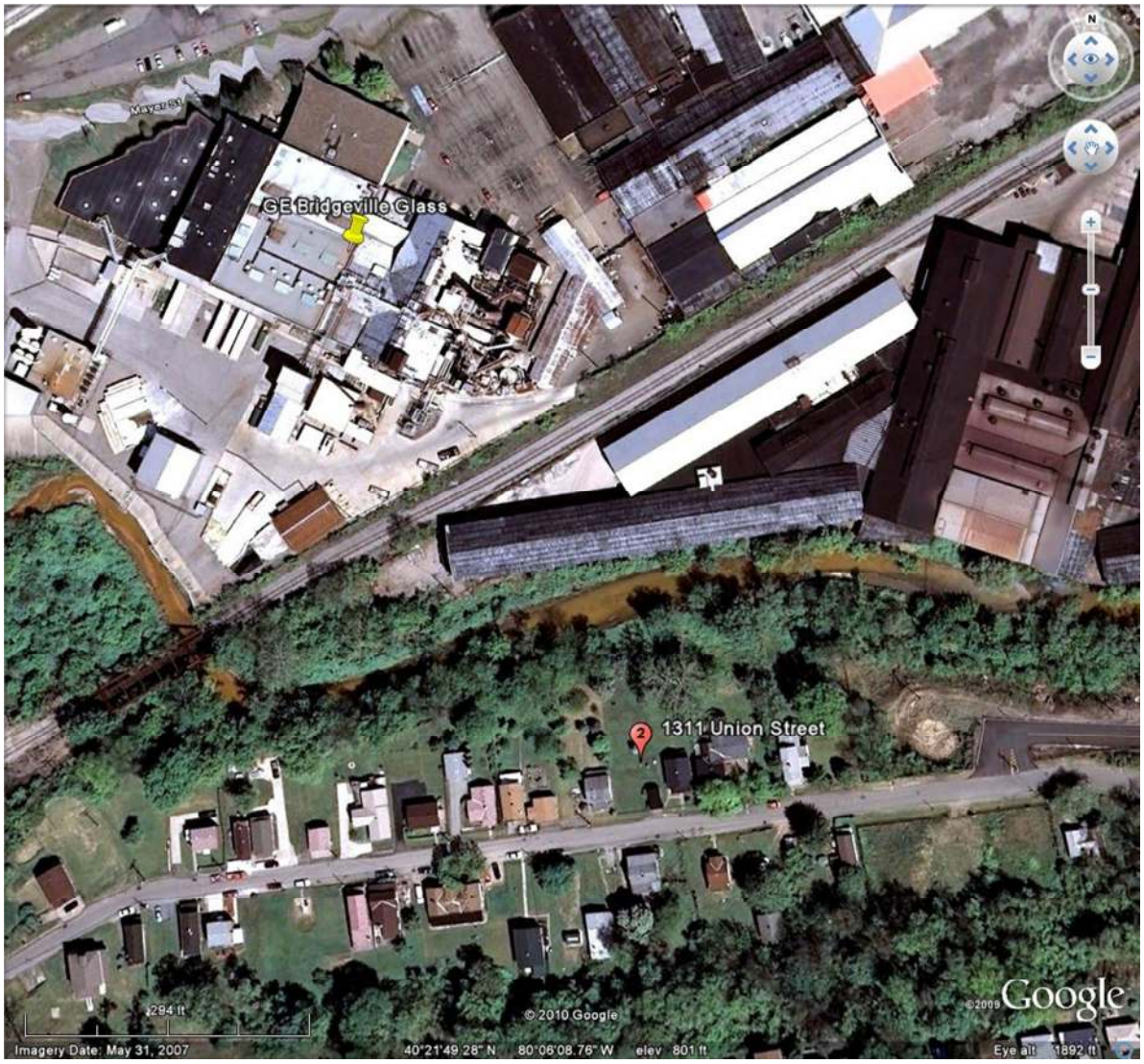
Street Name / Distance	Traffic Count (Vehicles/day)
Union St. (15m)	Unavailable
Terrace St. (100m)	Unavailable
Mayer St. (245m)	Unavailable
Washington Pike (520m)	18,000

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Industry
East	Residential
South	Residential
West	Residential

Direction	Obstructions	Height (m)	Distance (m)
North			
East			
South	Garage	2	5
West	House	4	10

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North	Valley	Rolling
East		Flat
South	Hill	Rolling
West		Flat

(Figure 7.13) Bridgeville Location Map



(7.14) Monroeville

Address	Evergreen Park Harper Drive Monroeville PA 15146		
AQS#	42 003 0003	MSA	Pittsburgh
Municipality	Monroeville	Elevation	350 m
Latitude (N)	40°27'0.42	Longitude (W)	79°46'15.46
Established	2010	Probe Height	3 m
Comments	Situated in a residential neighborhood. This location is impacted mainly by mobile sources.		

Sensor Type	**PM_{10}**	Appendix C Method Code	EQPM-0798-122
Network Designation	SLAMS	Method Description	Beta Attenuation Monitor
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Neighborhood
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

(7.14.1) Monroeville Area Information

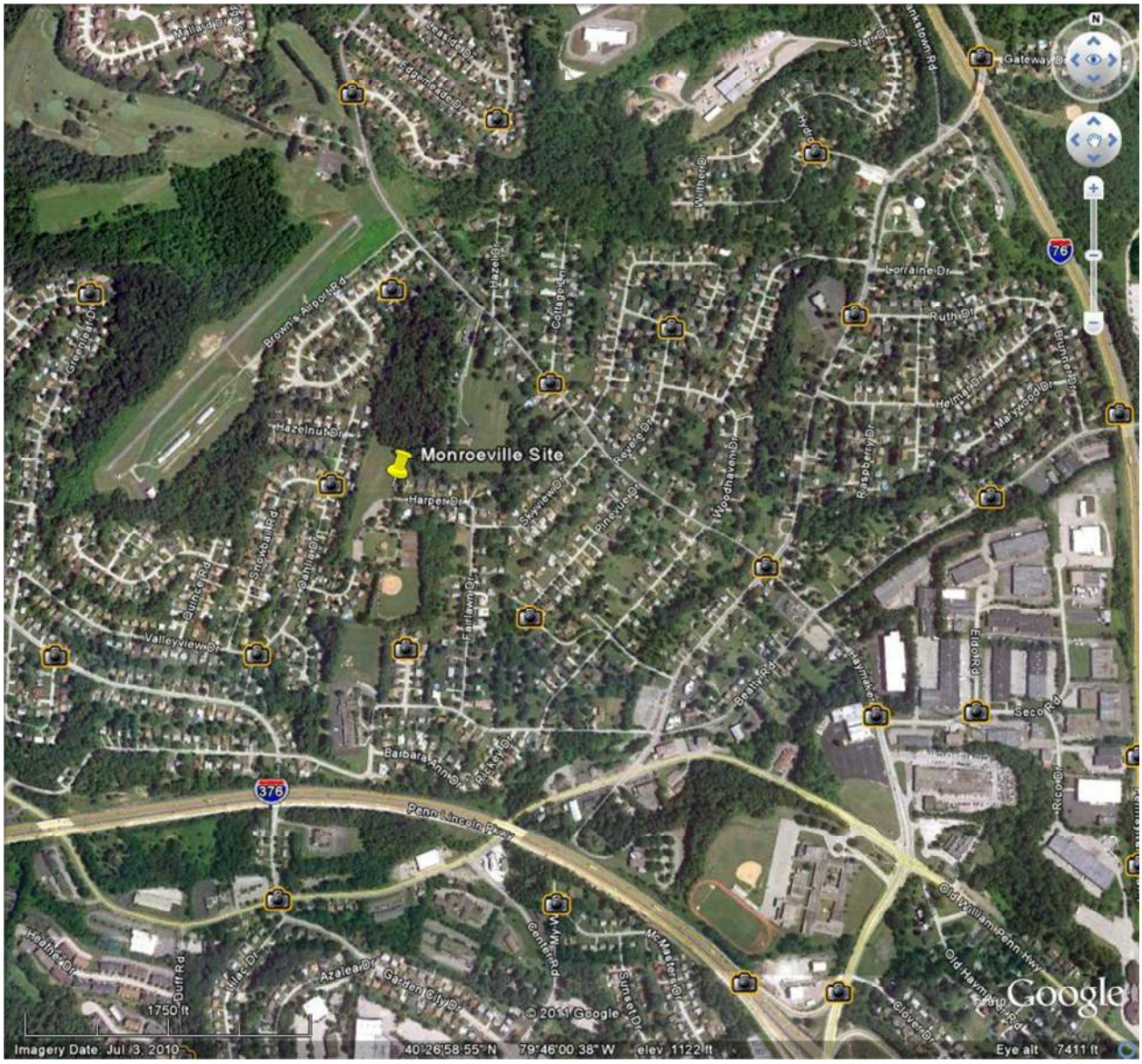
Street Name / Distance	Traffic Count (Vehicles/day)
Harper Drive (10 m)	Unavailable
Rt. 376 (590 m)	53,000
Logan's Ferry (362 m)	14,000

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Residential
East	Residential
South	Residential
West	Residential

Direction	Obstructions	Height (m)	Distance (m)
North			
East	Trees	7	13
South	Trees	8	20
West			

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North		Flat
East		Flat
South		Flat
West		Flat

(Figure 7.14) Monroeville Location



(7.15) Parkway East

Address	400 Sherwood Road Wilkinsburg, PA		
AQS#	42 003 1376	MSA	Pittsburgh
Municipality	Wilkinsburg	Elevation (m)	361
Latitude (N)	40°26'14.75"	Longitude (W)	79°51'48.86"
Established	N/A	Probe Height	3 m
Comments	This was installed to comply with updated NO_2 NAAQS. Monitor inlets sample air at 18 meters from the nearest traffic lane of Route 376 (Parkway East). This location was approved by EPA Region III to qualify as a near road monitoring site and measures population exposure to roadway emissions.		

Sensor Type	**Oxides of Nitrogen (NO_2) Trace Level**	Appendix C Method Code	RFNA-1194-099
Network Designation	SLAMS	Method Description	Chemiluminescence
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Micro-Scale
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

Sensor Type	**Carbon Monoxide (CO) Trace Level**	Appendix C Method Code	RFCA-1093-093
Network Designation	SLAMS	Method Description	Non-dispersive Infrared
Purpose	Regulatory Compliance	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Micro-Scale
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	Automated Equivalent Method	Appendix E Siting Criteria	Yes

Parkway East, Cont.

Sensor Type	**Black Carbon Monitor**	Appendix C Method Code	N/A
Network Designation	SPM	Method Description	Aethalometer
Purpose	Research/Scientific Monitoring	Appendix D Design Criteria	Yes
Sample Frequency	Continuous	Appendix D Scale	Micro-Scale
Appendix A QA Assessment	Yes	Appendix D Objectives	Population Exposure
Monitor Classification	N/A	Appendix E Siting Criteria	Yes

(7.15.1) Parkway East Area Information

Street Name / Distance	Traffic Count (Vehicles/day)
Penn Lincoln Parkway Rt. 376 (15m)	84,000

Direction	Predominant Land Use (Industry, Residential, Commercial or Agriculture)
North	Residential
East	Residential
South	Residential
West	Residential

Direction	Obstructions	Height (m)	Distance (m)
North			
East	Trees, Hill	15	33
South			
West			

Direction	Topographic Features (hills, valleys, rivers, etc.)	General Terrain (flat, rolling, rough)
North		Rolling
East	Hill	Rough
South		Rolling
West		Rolling

(Figure 7.15) Parkway East Near Road Site Location Map

(8) Public Comments Period

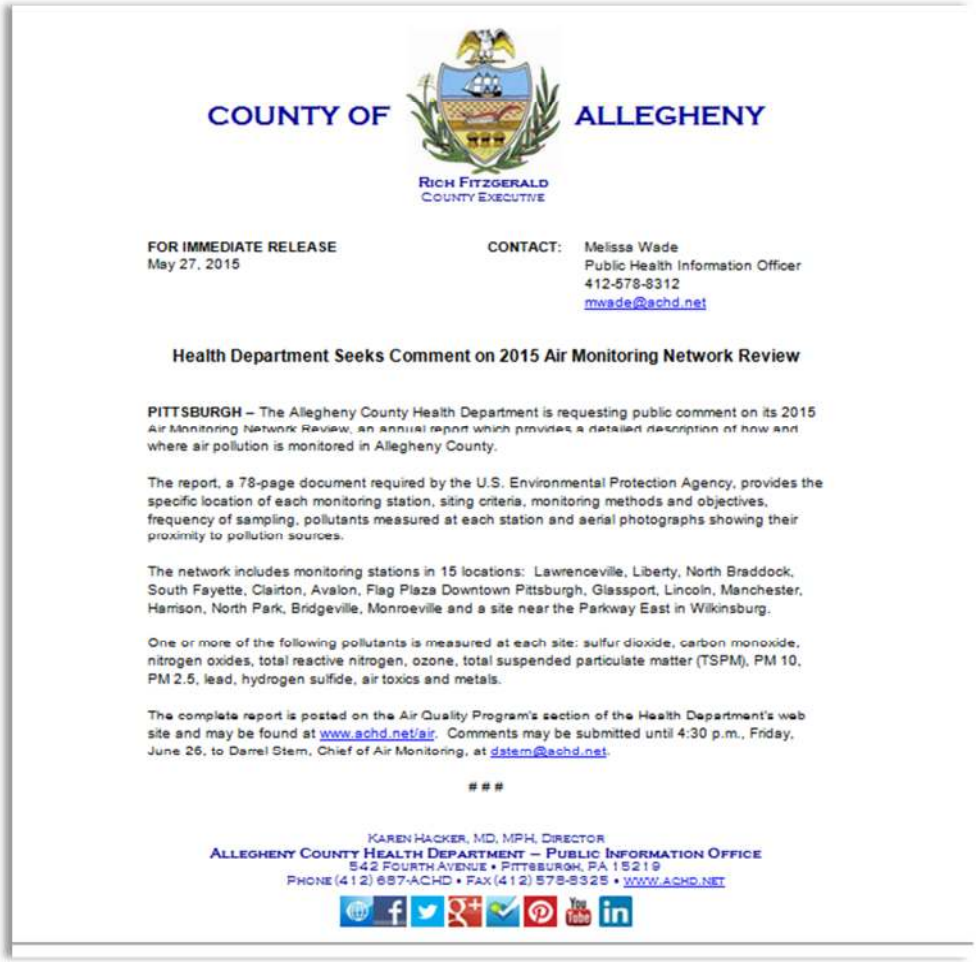
(8.1) Website Posting

During the month of June 2015, the final draft of the 2015 Network Review was posted prominently on the Air Quality Program website along with instructions regarding how to submit comments. Additionally, the Pennsylvania Department of Environmental Protection (PaDEP) was notified of the posting at the beginning of the comment period.

(8.2) Allegheny County Press Release

The Allegheny County Health Department's Public Information Office issued a press release on May 27, 2015 to notify the public of the opportunity to review and comment on the 2015 Network Review.

(Figure 8.2) Allegheny County Press Release



COUNTY OF ALLEGHENY

RICH FITZGERALD
COUNTY EXECUTIVE

FOR IMMEDIATE RELEASE
May 27, 2015

CONTACT: Melissa Wade
Public Health Information Officer
412-578-8312
mwade@achd.net

Health Department Seeks Comment on 2015 Air Monitoring Network Review

PITTSBURGH – The Allegheny County Health Department is requesting public comment on its 2015 Air Monitoring Network Review, an annual report which provides a detailed description of how and where air pollution is monitored in Allegheny County.

The report, a 78-page document required by the U.S. Environmental Protection Agency, provides the specific location of each monitoring station, siting criteria, monitoring methods and objectives, frequency of sampling, pollutants measured at each station and aerial photographs showing their proximity to pollution sources.

The network includes monitoring stations in 15 locations: Lawrenceville, Liberty, North Braddock, South Fayette, Clairton, Avalon, Flag Plaza Downtown Pittsburgh, Glassport, Lincoln, Manchester, Harrison, North Park, Bridgeville, Monroeville and a site near the Parkway East in Wilkinsburg.

One or more of the following pollutants is measured at each site: sulfur dioxide, carbon monoxide, nitrogen oxides, total reactive nitrogen, ozone, total suspended particulate matter (TSPM), PM 10, PM 2.5, lead, hydrogen sulfide, air toxics and metals.

The complete report is posted on the Air Quality Program's section of the Health Department's web site and may be found at www.achd.net/air. Comments may be submitted until 4:30 p.m., Friday, June 26, to Darrel Stern, Chief of Air Monitoring, at dstern@achd.net.

###

KAREN HACKER, MD, MPH, DIRECTOR
ALLEGHENY COUNTY HEALTH DEPARTMENT – PUBLIC INFORMATION OFFICE
542 FOURTH AVENUE • PITTSBURGH, PA 15219
PHONE (412) 687-ACHD • FAX (412) 578-8325 • WWW.ACHD.NET

(8.3) Comments Received During the Public Comment Period

(8.3.1) Sierra Club and Clean Air Council Comments on Allegheny County's 2015 Ambient Air Monitoring Network Review Draft

The Sierra Club and Clean Air Council submitted comments on the 2015 Annual Air Monitoring Network Review on June 24, 2015 in the form of an electronic document. This document in its entirety is presented in Attachment A. This document contains details regarding historical and current ambient sulfur dioxide regulations, as well as details of future requirements for state and local agencies under the sulfur dioxide national ambient air quality standards as revised during 2010. The document also includes information and results from an independently conducted modeling project that is used as evidence to demonstrate that the Cheswick power plant potentially causes an unclassified area of Allegheny County to exceed nation ambient air quality standards for sulfur dioxide. The purpose of this section is to respond to comments that directly impact the content of the 2015 Annual Network Review. These comments are listed along with the ACHD response below;

I. Comment: The proposed network of five SO_2 ambient monitors is insufficient to accomplish the monitoring objectives set forth in 40 C.F.R. Part 58 Appendix D, largely due to the fact that none of the five monitors are located in the vicinity of the Cheswick Power Station—the largest emitter of SO_2 pollution in Allegheny County. Because ACHD's 2015 Air Monitoring Network Review Draft fails to include a monitor that will register peak concentrations of SO_2 air pollution from this source in those areas where concentrations are likely to be the greatest, the Network is insufficient to accomplish the objectives identified by 40 C.F.R. Part 58 and must be revised. *See* 40 C.F.R. § 58 App. D, §§ 1.1, 1.1.1.

   ACHD Response: A recently completed air monitoring network assessment concluded that Allegheny County's SO_2 ambient air monitoring network provides dense coverage for the county. The monitors are correctly placed near industrial areas as well as providing urban and regional transport surveillance. The 2010 SO_2 NAAQS outlined procedures to demonstrate attainment of the standard through modeling and/or monitoring. For the currently designated Allegheny, PA nonattainment area, modeling is under development. If attainment can be demonstrated with modeling, no additional monitors will be required. For additional areas identified by the future Data Requirements Rule, either modeling or monitoring may be required.

II. Comment: Although the official identification of sources to be addressed for additional nonattainment area designations (i.e., areas near sources of high SO_2 emissions but not currently designated, such as Cheswick) may not be required until 2016, because ACHD has before it existing modeling results indicating where Cheswick Power Station is expected to cause peak SO_2 impacts, the 2015 Air Monitoring Network Review must be revised to ensure its monitoring sites will capture peak concentrations of SO_2 emissions from this large stationary source.

ACHD Response: The identification of sources to be addressed for additional nonattainment areas (i.e., areas near sources of high emissions but not currently designated, such as Cheswick) is required by Jan. 1, 2016 to EPA according to the proposed Data Requirements rule (final rule is expected by Oct. 2015). Ambient monitoring and/or dispersion modeling will be used to demonstrate attainment for these sources. If monitoring is deemed appropriate, the Department would be required to submit relevant information about the monitoring site(s) to the EPA Regional Administrator by July 1, 2016, as part of the annual monitoring network plan in accordance with the EPA's monitoring requirements specified in 40 CFR part 58. EPA proposes that the Department must have any relocated and/or new monitors operational by January 1, 2017. Work is still underway to determine the best course of action at this time. ACHD must rely on in-house or officially sanctioned modeling data for these determinations. The need for an additional site northeast of Pittsburgh is indeterminable at this time.

III. Comment: Monitors alone cannot accurately evaluate compliance with the SO_2 NAAQS for medium and large sources. Computer modeling, on the other hand, can analyze all possible conditions to predict concentrations that may not have occurred yet but could occur in the future. In addition to revising its 2015 Air Monitoring Network Review in order to ensure that the plan contains targeted, source oriented monitoring, for which the primary objective is to identify peak SO_2 concentrations in the ambient air that are attributable to Cheswick and any other large source of SO_2 emissions, ACHD must also continue to rely on dispersion modeling to comply with the one-hour SO_2 NAAQS.

ACHD Response: ACHD will continue to utilize both monitoring and dispersion modeling in accordance with the proposed Data Requirements rule to demonstrate attainment throughout the county. Based on recent emissions inventories and announced shutdowns, there are only 7 sources in Allegheny County emitting more than 10 tons/year of SO_2.

(8.3.2) Group Against Smog and Pollution (G.A.S.P.) Comments on Allegheny County's 2015Ambient Air Monitoring Network Review Draft

The Group against Smog and Pollution (G.A.S.P.) submitted comments on the 2015 Annual Air Monitoring Network Review on June 26, 2015 in the form of an electronic document. This document in its entirety is presented as Attachment B. The purpose of this section is to respond to comments that directly impact the content of the 2015 Annual Network Review. These comments are listed along with the ACHD response below;

I. Comment: "ACHD's air monitoring network must include SO_2 monitors located downwind from the Cheswick Power Plant and at ACHD's existing monitoring station in Glassport." Appendix D to Part 48 is quoted, suggesting that these monitors are needed to measure peak air pollution levels and to measure air pollution levels near specific sources. The comment continues to claim that the 5 current SO_2 monitoring sites do not meet these objectives, and that SO_2 sites should be located at or near points of maximum concentration as revealed by modeling.

ACHD's Response:
A recently completed air monitoring network assessment concluded that Allegheny County's SO_2 ambient air monitoring network provides dense coverage for the county. The monitors are correctly placed near industrial areas as well as providing urban and regional transport surveillance.

Glassport SO_2 Monitor: The 2010 SO_2 NAAQS outlined procedures to demonstrate attainment of the standard through modeling and/or monitoring. For the currently designated Allegheny, PA nonattainment area, modeling is under development. If attainment can be demonstrated with modeling, no additional monitors will be required. Due to serious degradation and vandalism at the former Glassport monitoring site, that location is no longer suitable as a monitoring location. If the decision is made to add new monitors to that area a new site will be installed at the location of maximum modeled SO_2 peak concentrations.

SO_2 Monitor Downwind of Cheswick Power Plant: The identification of sources to be addressed for additional nonattainment areas (i.e., areas near sources of high emissions but not currently designated, such as Cheswick) is required by Jan. 1, 2016 to EPA according to the proposed Data Requirements rule (final rule is expected by Oct. 2015). Ambient monitoring and/or dispersion modeling will be used to demonstrate attainment for these sources. If monitoring is deemed appropriate, the Department would be required to submit relevant information about the monitoring site(s) to the EPA Regional Administrator by July 1, 2016, as part of the annual monitoring network plan in accordance with the EPA's monitoring requirements specified in 40 CFR part 58. EPA proposes that the Department must have any relocated and/or new monitors operational by January 1, 2017. Work is still underway to determine the best course of action at this time.

II. Comment: "ACHD should install and operate a permanent monitor in downtown Pittsburgh to evaluate diesel emissions." Recognition is given to the Pittsburgh Diesel Study being conducted by ACHD in cooperation with Pitt University which is currently in progress. The comment concludes that based on study conclusions, one or more diesel particulate monitors should become a permanent part of the air monitoring network.

ACHD's Response: The Department is committed to investigating concentrations and health risks associated with diesel particulates in Allegheny County. The currently ongoing Pittsburgh Diesel Study will provide invaluable information towards accomplishing this goal. However, manual sampling methods employed by the Pittsburgh Diesel Study are not be suited to long term use in the air monitoring network due to high analytical costs and the labor associated with frequent sampling media change requirements.

ACHD successfully operates an aethalometer at the Parkway East near road monitoring site for the continuous measurement of black carbon (diesel particulate). Depending on the results of the Pittsburgh Diesel Study and also upon initial experiences with the near road aethalometer, the Department will be open to considering the purchase and installation of an aethalometer in the Downtown area in the future.

III. Comment: "ACHD should continue to operate air toxics monitors downwind of the operating coke ovens on Neville Island and in Clairton." Benzo(a)pyrene is pointed out as an important guide substance for polycyclic aromatic hydrocarbons (PAH) which can be emitted from leaks at coking chambers.

ACHD's Response: ACHD plans to continue to monitor for B(a)P at Liberty, Avalon and South Fayette air monitoring stations as indicated in the monitoring site descriptions in this document. This monitoring is achieved through laboratory analysis of high volume PM_{10} sample filters from each site. Charcoal tube sampling is also routinely carried out at Avalon and Liberty air monitoring stations with analysis for BTEX compounds and naphthalene. Additionally, a special air toxics study was initiated during 2015 in communities downwind of the Shenango Coke Works (see section 2.4.1, page 6 of this document). Plans are currently being made to implement a similar such study in areas surrounding the Clairton Coke Works later this year.

Attachment A

Sierra Club and Clean Air Council Comments on Allegheny County's 2015Ambient Air Monitoring Network Review Draft

Attachment B

Group Against Smog and Pollution (G.A.S.P.) Comments on Allegheny County's 2015Ambient Air Monitoring Network Review Draft

Law Office of Kathryn M. Amirpashaie, PLC
7556 Blanford Court
Alexandria, Virginia 22315

Kathryn M. Amirpashaie Telephone: 703.851.9111
E-Mail: kmalawoffice@gmail.com

June 24, 2015

VIA E-MAIL (dstern@achd.net)

Mr. Darrel Stern, Chief of Monitoring
Allegheny County Health Department
Air Quality Program
301 39th Street
Pittsburgh, PA 15201

Re: Sierra Club and Clean Air Council Comments on Allegheny County's 2015 Ambient Air Monitoring Network Review Draft

Dear Mr. Stern:

The Sierra Club and Clean Air Council submit the following comments on the Allegheny County Health Department's ("ACHD") 2015 Air Monitoring Network Review Draft.[1] In recognition of the fact that portions of Allegheny County have already been designated nonattainment for the health-based 2010 one-hour Sulfur Dioxide ("SO_2") National Ambient Air Quality Standard ("NAAQS"), these comments focus on the SO_2 monitoring aspect of the 2015 Air Monitoring Network Review. These comments also discuss the need for additional source-specific modeling in Allegheny County, as well as Pennsylvania as a whole, in order to appropriately implement the 2010 SO_2 NAAQS.

[1] Allegheny County Health Department, 2015 Air Monitoring Network Review Draft, July 1, 2015, available at http://www.achd.net/air/publiccomment2015/netrev2015draft.pdf.

I. BACKGROUND

A. National Ambient Air Quality: Standards

The Clean Air Act ("CAA" or "the Act") is, at its core, a directive to protect the public from harmful air pollution and enhance the public health and public welfare of the nation. *See* 42 U.S.C. § 7401(b)(1). Pursuant to this mandate, EPA is required to establish primary and secondary NAAQS for criteria pollutants in order to protect public health and welfare. 42 U.S.C. § 7409. Criteria pollutants—sulfur dioxides, nitrogen oxides, particulate matter, carbon monoxide, ozone, and lead—are those pollutants that "cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare" and are emitted by "numerous or diverse mobile or stationary sources." 42 U.S.C. §§ 7408(a)(1)(A)-(B). Primary standards are health-based standards set at a level adequate to protect the public from the harmful effects of exposure to the criteria pollutants with an adequate margin of safety. *See* 42 U.S.C. § 7409(b). Secondary standards define the air quality level required to protect the public welfare by preventing adverse impacts on other elements of the environment, such as vegetation. *See id*. Together, these standards represent a ceiling of air pollution concentrations that apply throughout the country to protect the public health and welfare. Once EPA has established NAAQS for criteria pollutants, the agency is obligated to review and revise the relevant NAAQS "at five-year intervals[.]" 42 U.S.C. § 7409(d)(1).

Not later than one year after promulgation or revision of a NAAQS, each state is required to submit to EPA a list designating all areas in the State as nonattainment, attainment, or unclassifiable for that NAAQS. 42 U.S.C. §7407(d)(1)(A). A nonattainment area is "any area… that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the [NAAQS] for the pollutant." *Id*. at § 7407(d)(1)(A)(i). An attainment area is "any area . . . that meets the [NAAQS] for the pollutant." *Id*. at § 7407(d)(1)(A)(ii). An unclassifiable area is "any area that cannot be classified on the basis of available information as meeting or not meeting the [NAAQS] for the pollutant." *Id*. at § 7407(d)(1)(A)(iii).

Within three years after promulgation or revision of a NAAQS, each state must submit a plan "which provides for implementation, maintenance, and enforcement of such [] standard in each air quality control region (or portion thereof) within such State." *Id*. at § 7410(a)(1). Promulgation of nonattainment designations also triggers additional, separate deadlines for states to submit plans for attaining a new or revised NAAQS in those nonattainment areas. *Id*. at §7410(a)(2)(I).

B. National Ambient Air Quality: Monitoring

In addition to other essential requirements, each state implementation plan for a NAAQS adopted and approved by EPA under 42 U.S.C. § 7410(a)(2) must "provide for establishment and

operation of appropriate devices, methods, systems, and procedures necessary to . . . monitor, compile, and analyze data on ambient air quality." 42 U.S.C. 7410(a)(2)(B)(i). Implementing regulations at 40 C.F.R. §58.1 *et seq*., set forth the "[m]inimum ambient air quality monitoring network requirements used to provide support to the State implementation plans (SIP), national air quality assessments, and policy decisions." 40 C.F.R. § 58.2. In accordance with applicable regulations of this Part, air agencies are required annually to "adopt and submit to the Regional Administrator an annual monitoring network plan which shall provide for the establishment and maintenance of an air quality surveillance system that consists of a network of [State or local air monitoring stations which make up the ambient air quality monitoring sites that are primarily needed for NAAQS comparisons]." 40 C.F.R. § 58.10(a)(1). Each monitoring plan "shall include a statement of purposes for each monitor and evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of this part, where applicable" and must be "made available for public inspection for at least 30 days prior to submission to EPA." *Id*. The overriding purpose of developing a sufficient and appropriate air quality monitoring network under these area-specific annual monitoring network plans is to ultimately determine which areas fail to meet the NAAQS thereby enabling the administrative agency to develop a state implementation plan which entails necessary pollution reductions in order to ensure that the human health and public welfare are protected.

C. <u>The Sulfur Dioxide NAAQS</u>

EPA first promulgated primary and secondary NAAQS for SO_2 in 1971.[2] On June 2, 2010, in recognition of the fact that the prior 24-hour and annual standards did not adequately protect the public against adverse respiratory effects associated with short term (5-minute to 24-hour) SO_2 exposure, EPA strengthened and revised the primary NAAQS for SO_2, issuing a one-hour standard. Final Rule, Primary National Ambient Air Quality Standard for Sulfur Dioxide, 75 Fed. Reg. 35520 (June 22, 2010).

The 2010 SO_2 NAAQS is a one-hour standard set at 75 parts per billion (ppb) (equivalent to 196.2 micrograms per cubic meter). 40 C.F.R. § 50.17(a). Compliance with the standard is determined by calculating the three-year average of the 99th percentile (fourth highest) of the annual distribution of the daily maximum one-hour average concentrations. 40 C.F.R. § 50.17(b). Due to both the shorter averaging time and lower concentration value, the 2010 SO_2 NAAQS is far more stringent than the previous standard and will have enormous public health benefits once properly implemented.

[2] EPA originally set the primary standard for SO_2 at 0.14 parts per million (ppm) for a 24-hour average and 0.03 ppm for an annual average.

In revising the standard, EPA noted that its rationale for the new NAAQS focused primarily on the causal relationship between respiratory morbidity and short-term exposure to SO_2. 75 Fed. Reg. at 35526. In fact, exposure to SO_2 in even very short time periods—such as five minutes—has significant adverse health impacts, including decrements in lung function, aggravation of asthma, and respiratory and cardiovascular morbidity. 75 Fed. Reg. at 35525; *see also* EPA, Fact Sheet: Revisions to the Primary National Ambient Air Quality Standard, Monitoring Network, and Data Reporting Requirements for Sulfur Dioxide, at 2, available at http://www.epa.gov/airquality/sulfurdioxide/pdfs/20100602fs.pdf ("Current scientific evidence links health effects with short-term exposure to SO_2 ranging from 5-minutes to 24-hours. Adverse respiratory effects include narrowing of the airways which can cause difficulty breathing (bronchoconstriction) and increased asthma symptoms."). Exposure to SO_2 pollution can also aggravate existing heart disease, leading to increased hospitalizations and premature deaths. 75 Fed. Reg. at 35525.

The variety of negative health effects associated with short-term SO_2 exposure is particularly dangerous for at-risk populations. "Studies also show an association between short-term SO_2 exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses - particularly in at-risk populations including children, the elderly and asthmatics." *Id*. "These effects are particularly important for asthmatics during periods of faster or deeper breathing (e.g., while exercising or playing)." EPA, Fact Sheet: Revisions to the Primary National Ambient Air Quality Standard, Monitoring Network, and Data Reporting Requirements for Sulfur Dioxide, at 2. Unfortunately, a considerable portion of Allegheny County's residents can be categorized as at-risk, and many of these at-risk populations live in the Pittsburgh area, a major population center in Allegheny County located near some of the State's largest sources of SO_2 emissions.

a. SULFUR DIOXIDE: AREA DESIGNATIONS AND ALLEGHENY COUNTY'S NONATTAINMENT AREA

In accordance with the CAA, following the June 2010 revision of the primary SO_2 NAAQS, EPA was required to promulgate and publish designations under the revised standard for all areas of every state pursuant to 42 U.S.C. §§ 7407(d)(1)(B)(i) and 7407(d)(2) as expeditiously as practicable, but not later than two years from promulgation of the revised SO_2 NAAQS. After missing the two-year deadline, EPA announced on August 3, 2012, that it was using its authority under 42 U.S.C. § 7407(d)(1)(B)(i) to extend the deadline for promulgating area designations by one year, stating that it was "now required to complete initial designations for this NAAQS by June 3, 2013." Extension of Deadline for Promulgating Designations for the 2010 Primary Sulfur Dioxide National Ambient Air Quality Standard, 77 Fed. Reg. 46295 (August 3, 2012).

Subsequently, on August 5, 2013, more than three years after promulgation of the NAAQS, EPA published a notice announcing designations of only 29 areas in 16 states as

nonattainment for the 2010 SO_2 standard. Air Quality Designations for the Revised SO_2 NAAQS, 78 Fed. Reg. 47191 (August 5, 2013). These initial and incomplete designations were based solely on available ambient air quality monitoring data for the years 2009-2011 that showed these areas were violating the standard. Included among those 29 areas was a partial county nonattainment designation for Allegheny County based on the violating Liberty monitor, which included the following cities:

> Borough of Braddock, Borough of Dravosburg, Borough of East McKeesport, Borough of East Pittsburgh, Borough of Elizabeth, Borough of Glassport, Borough of Jefferson Hills, Borough of Liberty, Borough of Lincoln, Borough of North Braddock, Borough of Pleasant Hills, Borough of Port Vue, Borough of Versailles, Borough of Wall, Borough of West Elizabeth, Borough of West Mifflin, City of Clairton, City of Duquesne, City of McKeesport, Elizabeth Township, Forward Township, North Versailles Township

78 Fed. Reg. at 47203. Notably, Allegheny County's largest SO_2 emissions source, the Cheswick Power Station, was not included in this partial nonattainment area, despite the State's recommendation to the contrary. *See* EPA Technical Support Document: Pennsylvania Area Designations for the 2010 SO_2 Primary National Ambient Air Quality Standard at 8-10, available at http://www.epa.gov/so2designations/tsd/03_PA_tsd.pdf. Instead, the Cheswick Power Station was left to be addressed "in a future final designations action." *Id* at 10.

Following the inadequate August 2013 designation process, and in light of EPA's failure to comply with the CAA's statutorily mandated deadline to perform its nondiscretionary duty to designate <u>all</u> portions of the country by the June 2013, Sierra Club filed a lawsuit against EPA. As a result of that lawsuit, on March 2, 2015, a Federal Court issued a consent decree ordering EPA to complete area designations for the 2010 SO_2 NAAQS as follows:

1. No later than July 2, 2016, EPA must designate two groups of areas: (1) areas that have newly monitored violations of the 2010 SO_2 standard; and (2) areas that contain any stationary source that according to the EPA's Air Markets Database either emitted more than 16,000 tons of SO_2 in 2012 or emitted more than 2,600 tons of SO_2 and had an annual average emission rate of at least 0.45 lbs SO_2/mmBtu in 2012 and that has not been announced (as of March 2, 2015) for retirement;

2. No later than December 31, 2017, EPA must make designations for remaining undesignated areas in which, by January 1, 2017, states have not installed and begun operating an appropriate SO_2 monitoring network meeting the EPA specifications referenced in EPA's anticipated SO_2 Data Requirements Rule;

3. No later than December 31, 2020, EPA must issue designations for all remaining undesignated areas, covering areas for which states choose to follow and timely implement the monitoring approach under the anticipated SO_2 Data Requirements Rule.

Stephen D. Page Memorandum re, Updated Guidance for Area Designations for the 2010 Primary Sulfur Dioxide National Ambient Air Quality Standard (Mar 20, 2015) at 3, available at http://www.epa.gov/oaqps001/sulfurdioxide/pdfs/20150320SO2designations.pdf. Notably, because of the overall delay in implementing the 2010 SO_2 NAAQS at both the state and federal level, and the resulting failure to establish and operate an appropriate nationwide ambient air monitoring network, EPA is anticipating that "the most reliable information for informing the July 2, 2016 [and, likely, the December 31, 2017] designations will be based on source modeling." *See id.*

b. Sulfur Dioxide: Characterizing Ambient Air Quality Through Modeling and Monitoring

In order to implement and determine compliance with the NAAQS, each state must provide for the establishment and operation of appropriate devices, methods, systems, and procedures necessary to monitor, compile, and analyze data on ambient air quality. 42 U.S.C. 7410(a)(2)(B). In revising the SO_2 NAAQS in 2010, EPA recognized the "strong source-oriented nature of SO_2 ambient impacts," 75 Fed. Reg. at 35370, and, as such, concluded that it would employ a hybrid analytic approach that would combine the use of monitoring and modeling to assess compliance with the new one-hour SO_2 NAAQS. In this regard, EPA determined that for the short-term, one-hour standard "it is more technically appropriate, efficient, and effective to use modeling as the principle means of assessing compliance for medium to larger sources, and to rely more on monitoring for groups of smaller sources and sources not as conducive to modeling." 75 Fed. Reg. at 35551.

EPA's final 2010 SO_2 NAAQS rule simply built on EPA's historical practice of using modeling to determine attainment and nonattainment status for the SO_2 NAAQS. As EPA has explained, using modeling to determine attainment for the SO_2 standard would "better address several potentially problematic issues than would the narrower monitoring-focused approach discussed in the proposal for the SO_2 NAAQS, including the unique source-specific impacts of SO_2 emissions and the special challenges SO_2 emissions have historically presented in terms of monitoring short-term SO_2 levels for comparison with the NAAQS in many situations (75 FR 35550)." U.S. EPA, *Implementation of the 1-Hour SO_2 NAAQS Draft White Paper for Discussion* at 3-4, *available at* http://www.epa.gov/airquality/sulfurdioxide/pdfs/20120522whitepaper.pdf.

In the past year, EPA has suggested that, despite "the superior utility that modeling offers for assessing SO_2 concentration," 75 Fed. Reg. 35550, it will allow states the "flexibility to choose whether to use monitoring or modeling to characterize air quality around or in proximity to identified sources." Draft Data Requirements Rule for the 1-Hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard (NAAQS); Proposed Rule, 79 Fed. Reg. 27446, 27453 (May 13, 2014), available at http://www.gpo.gov/fdsys/pkg/FR-2014-05-13/pdf/2014-09458.pdf. However, EPA emphasizes that even when states attempt to use monitoring to characterize air quality, states "will need to take specific actions to identify, relocate and/or install new ambient SO_2 monitors that would characterize peak 1-hour SO_2 concentrations in areas around or impacted by identified SO_2 sources."[3] *Id.* at 27458. This is especially important given the fact that, in developing the 2010 NAAQS, EPA conducted an analysis of SO_2 monitoring sites nationwide and found that only approximately "35% of the monitoring network was addressing locations of maximum (highest) concentrations, likely linked to a specific source or group of sources." 75 Fed. Reg. at 35557. "These data allowed EPA to conclude that the network was not properly focused to support the revised NAAQS." *Id.* Indeed, in promulgating the 2010 SO_2 NAAQS, EPA highlighted the significance of stationary sources in terms of establishing an appropriate monitoring network design, noting that peak one-hour concentrations would likely be greatest near stationary sources. 75 Fed. Reg. at 35557 ("Given that large stationary sources are the predominant source of emissions, monitoring short-term, peak ground level concentrations would require monitors to be sited to assess impacts of individual or groups of sources and therefore be source-oriented in nature.")

Still, because a single monitor cannot suffice to characterize the SO_2 air quality in the area surrounding a large stationary source, agencies must continue to use air dispersion modeling to evaluate and demonstrate compliance with the one-hour SO_2 NAAQS. Monitoring alone is insufficient. State and local air agencies must take a hybrid approach to implementing the 2010 NAAQS—focusing primarily on source-specific air dispersion modeling analyses, and supplementing those analyses with ambient monitoring data collected from a robust, properly sited monitoring network—that is, a network that accurately identifies "where short-term, peak

[3] In the proposed rule's companion Technical Assistance Document (Proposed Data Requirements Rule TAD), EPA offers the following guidance on how air agencies might satisfy the SO_2 data requirements in order to determine compliance with the NAAQS: "The EPA expects monitoring conducted in response to [an anticipated] future data requirements rule to be targeted, source-oriented monitoring, for which the primary objective would be to identify peak SO_2 concentrations in the ambient air that are attributable to an identified emission source or group of sources." *See* SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document, U.S. EPA Office of Air and Radiation, Office of Air Quality Planning and Standards, Air Quality Assessment Division (December 2013 Draft), http://www.epa.gov/airquality/sulfurdioxide/pdfs/SO2MonitoringTAD.pdf

ground-level concentrations—i.e., concentrations from 5 minutes to one hour (or potentially up to 24 hours)—may occur." *See* 75 Fed. Reg. at 35557.

II. ALLEGHENY COUNTY'S CURRENT SO_2 MONITORING NETWORK IS INADEQUATE TO MONITOR THE THREATS TO ALLEGHENY COUNTY CITIZENS' HEALTH POSED BY SO_2 POLLUTION FROM LARGE STATIONARY SOURCES.

A. Allegheny County's Ambient SO_2 Monitors are Not Deployed in a Manner that Captures Peak Impacts from Major Stationary Sources.

Pursuant to EPA regulations, ambient air monitoring network plans must achieve three objectives: (1) provide air pollution data to the general public; (2) support compliance with ambient air quality standards and emissions strategy development; and (3) provide supporting data for air pollution research. 40 C.F.R. § 58, App. D, § 1.1. In order to meet these objectives, "a network must be designed with a variety of types of monitoring sites."[4] *Id*. at § 1.1.1. As such, "[t]he total number of [SO_2] monitoring sites that will serve the variety of data needs will be substantially higher than [] minimum requirements." *Id*. at § 1.1.2. Ultimately, "[m]onitoring sites must be capable of informing [air quality] managers about many things including the peak air pollution levels, typical levels in populated areas, air pollution transported into and outside of a city or region, and air pollution levels near specific sources." *Id*. at § 1.1.1. (emphasis added). Certainly, an SO_2 monitoring network can only support compliance with the NAAQS if individual monitors are located such that they will measure the areas of greatest concentration, *i.e*., areas affected by the largest sources of SO_2 pollution.

When adopting the one-hour SO_2 NAAQS, EPA observed that the highest concentrations of SO_2 would most likely be found near large stationary sources. 75 Fed. Reg. at 35557 ("[A] significant fact for ambient SO_2 concentrations is that stationary sources are the predominant emission sources of SO_2 and the peak, maximum SO_2 concentrations that may occur are most likely to occur nearer the parent stationary source."). Accordingly, ACHD's Air Monitoring Network must consist of targeted, source-oriented monitors, for which the primary objective is to identify peak SO_2 concentrations in the ambient air that are attributable to an identified emission source (or group of sources). *See* SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document, U.S. EPA Office of Air and Radiation, Office of Air Quality

[4] The regulations specify six general site types: (a) Sites located to determine the highest concentrations expected to occur in the area covered by the network; (b) Sites located to measure typical concentrations in areas of high population density; (c) Sites located to determine the impact of significant sources or source categories on air quality; (d) Sites located to determine general background concentration levels; (e) Sites located to determine the extent of regional pollutant transport among populated areas; and in support of secondary standards; and (f) Sites located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts. *See* 40 C.F.R. § 58, App. D, § 1.1.1.

Planning and Standards, Air Quality Assessment Division (December 2013 Draft) at 2, (hereafter "Proposed Data Requirements Rule TAD") available at http://www.epa.gov/airquality/sulfurdioxide/pdfs/SO2MonitoringTAD.pdf. Because stationary sources are by far the largest contributors to ambient SO_2 pollution, as a starting point, ACHD must place monitors in areas of predicted peak emissions concentrations for at least the largest sources of SO_2 emissions. Proposed Data Requirements Rule TAD at 16. A network that omits monitors near the largest sources of SO_2 pollution fails to provide at-risk members of the public with adequate and accurate information about the quality of the air they are breathing. Thus, in combination with conducting necessary source-specific air dispersion modeling analyses, and in the interest of both efficiency and the health of Allegheny County residents, ACHD must ensure SO_2 monitors are placed in priority areas based on the extent of source-based SO_2 emissions as well as proximity to potentially-affected populations.

As drafted, ACHD's 2015 Air Monitoring Network Review proposes the maintenance of its five current SO_2 monitors—located in Lawrenceville, Liberty, North Braddock, South Fayette, and Avalon.[5] However, this proposed network of five SO_2 ambient monitors is insufficient to accomplish the monitoring objectives set forth in 40 C.F.R. Part 58 Appendix D, largely due to the fact that none of the five monitors are located in the vicinity of the Cheswick Power Station—the largest emitter of SO_2 pollution in Allegheny County.[6] As a result of excluding source-oriented monitors near the County's largest source of SO_2 emissions, the 2015 Monitoring Network is incapable of informing air quality managers about air pollution levels near this specific source or the impact the Plant has on air quality in the surrounding communities. *See* 40 C.F.R. § 58 App. D, § 1.1.1. Especially where there is a single source, such as the Cheswick Power Station, that contributes an overwhelming amount of an area's SO_2 pollution, monitoring of that source in order to accurately characterize peak SO_2 concentrations in the surrounding area is imperative in order to protect the NAAQS. *See id*. § 1.1(b). Particularly since the attainment and maintenance of the NAAQS would likely depend on the effectiveness of control measures applied to that source, relevant source-centered monitoring data is necessary. Because ACHD's Draft 2015 Air Monitoring Network Review fails to include SO_2 monitors capable of capturing peak predicted emission concentrations from the County's largest source of SO_2 emissions—the Cheswick Power Station, the 2015 Air Monitoring Network is inadequate and muse be revised.

---

[5] *See* ACHD's 2015 Air Monitoring Network Review Draft, at 10.

[6] *See* Pennsylvania Department of Environmental Protection, eFACTS Facility Emissions Reports Query, http://www.ahs.dep.pa.gov/eFACTSWeb/criteria_facilityemissions.aspx.

B. Modeling and Emissions Data Support the Installation of a Source-Oriented SO_2 Monitor Downwind of the Cheswick Power Station.

The Cheswick Power Station is the single largest source of SO_2 emissions in Allegheny County, even after installation of a flue gas desulfurization system in 2011. Although there was an initial decrease in annual tons of SO_2 emitted from the plant the two years immediately following installation of the SO_2 control equipment, the level of SO_2 emitted from the Plant rose again sharply last year, as illustrated in the Table below.[7]

Table: Cheswick Power Station – Annual Tons of SO_2 Emitted	
Year	**Tons**
2014	4,445
2013	1,686
2012	1,911
2011	9,290
2010	11,806

Yet, despite being the largest source of SO_2 emissions in the entire Pittsburgh and larger Allegheny County area, there are no monitors installed, operated, or planned which would capture peak concentrations of SO_2 downwind of the Plant or any monitors that would appropriately characterize air quality around the Power Station. All SO_2 monitors in ACHD's network are located upwind of Cheswick.[8] As a result, ACHD's 2015 Air Monitoring Network Review Draft lacks a site which would determine the impact this significant source of SO_2 emissions has on air quality in the surrounding area. *See* 40 C.F.R. § 58 App. D, § 1.1.1(c). Moreover, the 2015 Air Monitoring Network Review Draft fails to ensure that SO_2 emissions from the Cheswick Plant will not cause or contribute to exceedances of the NAAQS in areas downwind of the facility. *See* 40 C.F.R. § 58 App. D, § 1.1(b) ("[A]mbient air monitoring networks must be designed to . . . [s]upport compliance with ambient air quality standards."). Because ACHD's 2015 Air Monitoring Network Review Draft fails to include a monitor that will register peak concentrations of SO_2 air pollution from this source in those areas where concentrations are likely

[7] EPA's Air Markets Program Database Query, available at http://ampd.epa.gov/ampd/.

[8] Compare location of SO_2 monitors in Allegheny County Health Department, 2015 Air Monitoring Network Review Draft (July 1, 2015), at 10, Fig. 4.2, available at http://www.achd.net/air/publiccomment2015/netrev2015draft.pdf, with EPA Technical Support Document: Pennsylvania Area Designations for the 2010 SO_2 Primary National Ambient Air Quality Standard at 11 ("The prevailing wind directions at the Allegheny County Airport are predominantly out of the south and west. At the Pittsburgh International Airport, the prevailing winds are predominantly out of the west/southwest."), available at http://www.epa.gov/so2designations/tsd/03_PA_tsd.pdf.

to be the greatest, the Network is insufficient to accomplish the objectives identified by 40 C.F.R. Part 58 and must be revised. *See* 40 C.F.R. § 58 App. D, §§ 1.1, 1.1.1.

Ensuring that SO_2 emissions from the Cheswick Power Station are properly monitored and ambient air quality is accurately characterized is especially important given the fact that recent expert air dispersion modeling of the facility performed at Sierra Club's request demonstrates that, based on currently permitted emissions, the Cheswick Power Station is estimated to create downwind SO_2 concentrations which exceed the one-hour NAAQS. *See* Cheswick Power Station, Springdale, Pennsylvania, Sierra Club Evaluation of Compliance with 1-hour SO_2 NAAQS (January 23, 2014), attached hereto as Exhibit 1.

The expert modeling analysis further determined that modeled exceedances of the NAAQS extend throughout the region up to 18 kilometers from the Plant. The nearest SO_2 monitors are the Lawrenceville and North Braddock monitors, which are located over 20 km southwest and upwind of the plant. Due to the distance and location of these monitors, there is little to no chance that the maximum, peak ambient SO_2 concentration generated by Cheswick will be observed at either monitor. Thus, because there currently exists no monitors in Allegheny County that can be used to characterize air quality and peak ambient SO_2 concentrations around the Cheswick Power Station, ACHD's 2015 Air Monitoring Network Review Draft fails to satisfy the need for source-oriented monitors, as required by 40 C.F.R. Part 58 Appendix D and EPA's proposed data requirements rule. *See* 79 Fed. Reg. 27453 ("[I]mportant monitoring objectives should include (1) characterization of peak air quality concentrations in the area around the source (e.g., source-oriented and maximum concentration monitoring); and (2) characterization of air quality in populated areas, intended to represent ambient concentrations to which people in the area are exposed."). Because the 2015 Monitoring Network is insufficient to characterize SO_2 air quality, ACHD must continue to use dispersion modeling to comply with the one-hour SO_2 standard for Cheswick and all other large sources in similar situations. Where the air monitoring network is insufficient to adequately characterize peak SO_2 air quality, ACHD must use dispersion modeling to determine compliance with the one-hour SO_2 standard.

Also of note is the fact that EPA has instructed state and local air agencies to take into account as much available data as possible, including: source emission profiles, existing air quality data, and existing modeling results, when determining where a sufficient number of SO_2 monitors should be sited to characterize ambient peak SO_2 concentrations from a source (or sources). *See* USEPA, SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document (Dec. 2013) at 2. Thus, although the official identification of sources to be addressed for additional nonattainment area designations (i.e., areas near sources of high SO_2 emissions but not currently designated, such as Cheswick) may not be required until 2016, because ACHD has before it existing modeling results indicating where Cheswick Power Station is expected to cause

peak SO_2 impacts, the 2015 Air Monitoring Network Review must be revised to ensure its monitoring sites will capture peak concentrations of SO_2 emissions from this large stationary source.[9]

III. THERE IS A COMPELLING NEED FOR ADDITIONAL SOURCE-ORIENTED SO_2 MODELING IN ALLEGHENY COUNTY.

Commenters are aware that the ACHD is in the process of conducting air dispersion modeling assumedly to determine compliance with and implementation of the 2010 SO_2 NAAQS. We support all modeling efforts in order to accurately determine compliance with the NAAQS and would like to contribute and engage in the process where possible to ensure development of a robust monitoring network, informed and supplemented by air quality modeling, to ensure Allegheny County, and Pennsylvania at large, is able to identify, address, and prevent SO_2 NAAQS exceedances.

A. Monitors Alone Cannot Accurately Evaluate Compliance With The SO_2 NAAQS For Medium And Large Sources.

When EPA promulgated the 2010 SO_2 NAAQS, it recognized that the current ambient air monitoring network—consisting of less than a third of the number of monitors in place three decades ago[10]—is insufficient to support a monitoring approach to implementation of the NAAQS. As EPA explained in the final rule, "even if monitoring does not show a violation," that absence of data is not determinative of attainment status absent modeling, and that monitoring in general is "less appropriate, more expensive, and slower to establish." 75 Fed. Reg. 35551. This has been EPA's position for decades. *See id*. EPA's preference for modeling also recognizes that deploying a more extensive monitoring network as part of the NAAQS implementation process would suffer from a number of drawbacks rendering the approach too slow, too impractical, and too ineffective for monitoring to replace modeling as the primary means of implementing the one-hour SO_2 NAAQS.

First of these drawbacks is the fact that the minimum monitoring requirements established by EPA for the most part are insufficient to characterize SO_2 air quality or to determine compliance with the one-hour SO_2 standard. For instance, due to inherent deviations in hourly source emissions coupled with variable meteorological conditions, a single SO_2 monitor positioned to capture peak concentrations from a large SO_2 source will be inadequate to establish

---

[9] *See* Proposed Data Requirements Rule TAD at 16 ("The primary objective is to place monitoring sites at the location or locations of expected peak concentrations.").

[10] *See* 79 Fed. Reg. at 27449 ("[T]he ambient SO_2 monitoring network has declined in number since its peak of approximately 1,500 monitors in 1980 to its current size of approximately 450 monitors (as of June 2013).").

compliance with the one-hour standard since the exact location of those peak concentrations will expectedly shift on an hourly basis. As EPA recognizes:

> A small number of ambient SO_2 monitors usually is not representative of the air quality for an area. Typically, modeling estimates of maximum ambient concentration are based on a fairly infrequent combination of meteorological and source operating conditions. To capture such results on a monitor would normally require a prohibitively large and expensive network. Therefore, dispersion modeling will generally be necessary to evaluate comprehensively a source's impacts and to determine the areas expected high concentrations.[] Air quality modeling results would be especially important if sources were not emitting at their maximum level during the monitoring period or if the monitoring period did not coincide with potentially worst-case meteorological conditions.

U.S. EPA 1994 SO_2 Guideline Document at 2-5 to 2-6 (emphasis added), available at http://www.epa.gov/ttn/naaqs/aqmguide/collection/cp2/19940201_oaqps_epa-452_r-94-008_so2_guideline.pdf. In addition:

> Monitoring is not more accurate than computer modeling, except for determining ambient concentrations under real-time conditions at a discrete location. Monitoring is limited in time as well as space. Monitoring can only measure pollutant concentrations as they occur; it cannot predict future concentrations when emission levels and meteorological conditions may differ from present conditions. Computer modeling, on the other hand, can analyze all possible conditions to predict concentrations that may not have occurred yet but could occur in the future.

67 Fed. Reg. 22168, 22185 (May 2, 2002) (emphasis added).

As far back as 1983, EPA stated that in "most SO_2 cases, monitoring data alone will not be sufficient for areas dominated by point sources." Sheldon Meyers Memorandum re Section 107 Designation Policy Summary (April 21, 1983), available at http://www.epa.gov/ttnmain1/naaqs/aqmguide/collection/cp2/19830421_meyers_section_107_redesignation.pdf; *see also Montana Sulphur & Chemical Co. v. EPA,* 666 F.3d 1174, 1184 (9th Cir. 2012) ("EPA explained that it was 'not practical, given the number and complexity of sulfur dioxide sources, to install a sufficient number of monitors to provide the spatial coverage provided by air quality dispersion models.'") (emphasis added). "A small number of ambient monitors usually is not representative of the air quality for the entire area." *Id.* Indeed, it is unlikely that *any* number of monitors would be sufficient to implement the NAAQS. Again, due to the variation of source operations and ever-changing meteorological conditions, there can be

no guarantee that even multiple monitors around a source would accurately measure the location and concentration of peak impacts from that source. This is especially true in Allegheny County where most of the large (>100 tpy) SO_2 point sources reside within the river valleys which "can create complex wind patterns." *See* EPA Technical Support Document: Pennsylvania Area Designations for the 2010 SO_2 Primary National Ambient Air Quality Standard at 13, available at http://www.epa.gov/so2designations/tsd/03_PA_tsd.pdf.

Second, even if the ACHD were to come up with the resources to deploy a sufficient number of monitors, the agency may not be able locate a monitor where the highest impact are likely to occur for technical reasons, such as inability to gain physical or legal access to the site, or lack of access to power supply.[11]

Third, even if an extensive monitoring network were established, implementation of the NAAQS through monitoring would be slow; likely take up to a decade from the present, which is an unacceptable amount of time considering already half a decade has passed since the standard was promulgated. Not only would this delay be a disservice to the public and a continued threat to their health, it would also be a disservice to the regulated entities, particularly owners of coal-fired power plants who are making critical decisions now about the need for additional pollution controls or retirements. Evaluating and achieving compliance through more expeditious and cost-effective air dispersion modeling can thus provide the regulatory clarity needed to make prudent decisions about those plants now.

B. The Cost of Modeling is Modest Compared to the Cost of Monitoring

The cost of modeling compliance with the SO_2 NAAQS is modest, particularly in comparison to the costs of installing and operating an extensive monitoring network. One of the main reasons it is significantly cheaper to model rather than monitor for attainment designations is the profile of SO_2 emitters. SO_2 emissions are not spread evenly across all of the SO_2 emitters in the United States, Pennsylvania, or Allegheny County. In particular, the vast majority of SO_2 emissions are from coal-fired power plants.[12] As a result, by focusing on this small subset of SO_2 sources, as well additional sources of SO_2 emissions in and around the Allegheny Area, for instance beginning with those that emit more than 100 tons per year of SO_2, ACHD could expeditiously make significant progress in ensuring that the health protections promised by the NAAQS are achieved. The profile of SO_2 emitters—where a handful of medium and large sources generate nearly all of SO_2 emissions in the country, coupled with the source specific locational

[11] An inability to place monitors at appropriate locations is another argument in favor of a modeling approach, as EPA has long recognized: "Although siting criteria may preclude the placement of ambient monitors at certain locations, this does not preclude the placement of model receptors at these sites." U.S. EPA 1994 SO_2 Guideline Document at 2-6.

[12] *See* 2011 National Emissions Inventory, http://www.epa.gov/ttnchie1/net/2011inventory.html.

nature of SO_2 air pollution allows SO_2 air pollution from those sources to be readily and accurately modeled by simple particle dispersion modeling.

Indeed, ACHD's modeling staff could likely model the County's medium and large SO_2 emitters under its current budget. Even if in-house modeling resources were unavailable, the agency could hire outside, expert air dispersion modelers to conduct the analyses, incurring comparatively nominal costs as opposed to those that would be incurred with an expansion of the County's ambient monitoring network. In stark contrast, EPA "estimates that the capital costs of siting a new monitor can be on the order of $50,000 to $100,000." 79 Fed. Reg. at 27450. In addition, "[r]outine operations and maintenance costs would be in addition to those up-front capital costs." *Id.* The comparative costs of modeling vs. monitoring, therefore, is another reason why ACHD should prioritize modeling of large sources of SO_2 pollution in order to accurately determine where peak concentrations occur and to protect the health of individuals in and around those communities.

IV. CONCLUSION

For the reasons set forth above and because ACHD's monitoring network will not characterize peak concentrations from the Cheswick Power Station, ACHD must revise its 2015 Air Monitoring Network Review Draft in order to ensure that the plan contains targeted, source-oriented monitoring, for which the primary objective is to identify peak SO_2 concentrations in the ambient air that are attributable to Cheswick and any other large source of SO_2 emissions. ACHD must also continue to rely on dispersion modeling to comply with the one-hour SO_2 standard.

Respectfully submitted,

/s Kathryn Amirpashaie

_____

Kathryn M. Amirpashaie
Law Office of Kathryn M. Amirpashaie, PLC
7556 Blanford Court
Alexandria, VA 22315
Tel.: 703.851.9111
E-mail: kmalawoffice@gmail.com
Outside Counsel for the Sierra Club

Zachary M. Fabish
The Sierra Club
50 F Street NW, 8th Floor
Washington, D.C. 20001
Tel.: 202.675.7917
E-mail: zachary.fabish@sierraclub.org
Staff Attorney for the Sierra Club

Ryan H. Knapick
Clean Air Council
135 South 19th Street, Suite 300
Philadelphia, PA 19103
Tel.: 215.567.4004, ext. 125
E-mail: rknapick@cleanair.org
Staff Attorney for Clean Air Council

EXHIBIT 1

Cheswick Power Station

Springdale, Pennsylvania

Sierra Club Evaluation of Compliance with 1-hour SO_2 NAAQS

January 23, 2014

Conducted by:

Steven Klafka, P.E., BCEE

Wingra Engineering, S.C.

Madison, Wisconsin

1. Introduction

Wingra Engineering, S.C. was hired by the Sierra Club to conduct an air modeling impact analysis to help USEPA, state and local air agencies identify facilities that are likely causing violations of the 1-hour sulfur dioxide (SO_2) national ambient air quality standard (NAAQS). This document describes the results and procedures for an evaluation conducted for the Cheswick Power Station located in Springdale, Pennsylvania.

The dispersion modeling analysis predicted ambient air concentrations for comparison with the one hour SO_2 NAAQS. The modeling was performed using the most recent version of AERMOD, AERMET, and AERMINUTE, with data provided to the Sierra Club by regulatory air agencies and through other publicly-available sources as documented below. The analysis was conducted in adherence to all available USEPA guidance for evaluating source impacts on attainment of the 1-hour SO_2 NAAQS via aerial dispersion modeling, including the AERMOD Implementation Guide; USEPA's Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard, August 23, 2010; modeling guidance promulgated by USEPA in Appendix W to 40 CFR Part 51; and, USEPA's March 2011 Modeling Guidance for SO_2 NAAQS Designations.[1]

2. Compliance with the 1-hour SO_2 NAAQS

2.1 1-hour SO_2 NAAQS

The 1-hour SO_2 NAAQS takes the form of a three-year average of the 99th-percentile of the annual distribution of daily maximum 1-hour concentrations, which cannot exceed 75 ppb.[2] Compliance with this standard was verified using USEPA's AERMOD air dispersion model, which produces air concentrations in units of μg/m^3. The 1-hour SO_2 NAAQS of 75 ppb equals 196.2 μg/m^3, and this is the value used for determining whether modeled impacts exceed the NAAQS.[3] The 99th-percentile of the annual distribution of daily maximum 1-hour concentrations corresponds to the fourth-highest value at each receptor for a given year.

2.2 Modeling Results

Modeling results for Cheswick Power Station are summarized in Table 1. It was determined that based on either currently permitted emissions or measured actual emissions, the Cheswick Power Station is estimated to create downwind SO_2 concentrations which exceed the 1-hour NAAQS.

---

[1] http://www.epa.gov/scram001/so2_modeling_guidance.htm
[2] USEPA, Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard, August 23, 2010.
[3] The ppb to μg/m^3 conversion is found in the source code to AERMOD v. 12345, subroutine Modules. The conversion calculation is 75/0.3823 = 196.2 μg/m^3.

For the modeling results presented in Table 1, the evaluated emission rates include the allowable and maximum. "Allowable" is the peak emission rate from each unit as approved by the current air quality operation permit for the facility. "Maximum" is the highest combined emission rate from all units during any single hour as measured during 2012.

Air quality impacts in Pennsylvania are based on a background concentration of 20.9 µg/m^3. This is the 2009-11 design value for Philadelphia County, Pennsylvania - the lowest measured background concentration in the state. This is the most recently available design value.

Table 1 - SO_2 Modeling Results for Cheswick Power Station Modeling Analysis

Emission Rates	Location	Averaging Period	99th Percentile 1-hour Daily Maximum (µg/m^3)				Complies with NAAQS?
			Impact	Background	Total	NAAQS	
Allowable	All	1-hour	610.7	20.9	631.6	196.2	No
Maximum	All	1-hour	403.4	20.9	424.3	196.2	No

The currently permitted emissions and measured maximum emissions used for the modeling analysis are summarized in Table 2.

Table 2 - Modeled SO_2 Emissions from Cheswick Power Station [4,5]

Stack ID	Unit ID	Allowable Emissions 3-hour Average (lbs/hr)	Maximum Emissions 1-hour Average (lbs/hr)
S-001	No. 1	15,400	10,172

Based on the modeling results, emission reductions from current rates considered necessary to achieve compliance with the 1-hour NAAQS were calculated and presented in Table 3.

[4] Allowable emissions are based on a limitation of 2.8 lbs of SO_2 per million BTU heat input in Title V Operating Permit and Federally Enforceable State Operating Permit #0054, Allegheny County Health Department, Air Quality Program, December 30, 2010. The maximum heat input of Boiler No. 1 is 5,500 mmbtu per hour.
[5] Maximum emissions are measured hourly rates reported for 2012 in USEPA, Clean Air Markets - Data and Maps.

Table 3 - Required Emission Reductions for Compliance with 1-hour SO_2 NAAQS

Acceptable Impact (NAAQS - Background) 99th Percentile 1-hour Daily Max ($\mu g/m^3$)	Required Total Facility Reduction Based on Allowable Emissions (%)	Required Total Facility Emission Rate (lbs/hr)	Required Total Facility 1-hour Average Emission Rate (lbs/mmbtu)
175.3	71.3%	4,420.5	0.80

Predicted exceedences of the 1-hour NAAQS for SO_2 extend throughout the region to a maximum distance of 18 kilometers.

Figure 1 shows the extent of NAAQS violations throughout the entire 50 kilometer modeling domain.

Figure 2 provides a close-up local view of NAAQS violations.

2.3 Conservative Modeling Assumptions

A dispersion modeling analysis requires the selection of numerous parameters which affect the predicted concentrations. For the enclosed analysis, several parameters were selected which under-predict facility impacts.

Assumptions used in this modeling analysis which likely under-estimate concentrations include the following:

- Allowable emissions are based on a limitation with an averaging period which is greater than the 1-hour average used for the SO_2 air quality standard. Emissions and impacts during any 1-hour period may be higher than assumed for the modeling analysis.
- No consideration of facility operation at less than 100% load. Stack parameters such as exit flow rate and temperature are typically lower at less than full load, reducing pollutant dispersion and increasing predicted air quality impacts.
- No consideration of building or structure downwash. These downwash effects typically increase predicted concentrations near the facility.
- No evaluation has been conducted to determine if the stack height exceeds Good Engineering Practice or GEP height. If the stack height exceeds GEP, the predicted concentrations will increase.
- No consideration of off-site sources. These other sources of SO_2 will increase the predicted impacts.

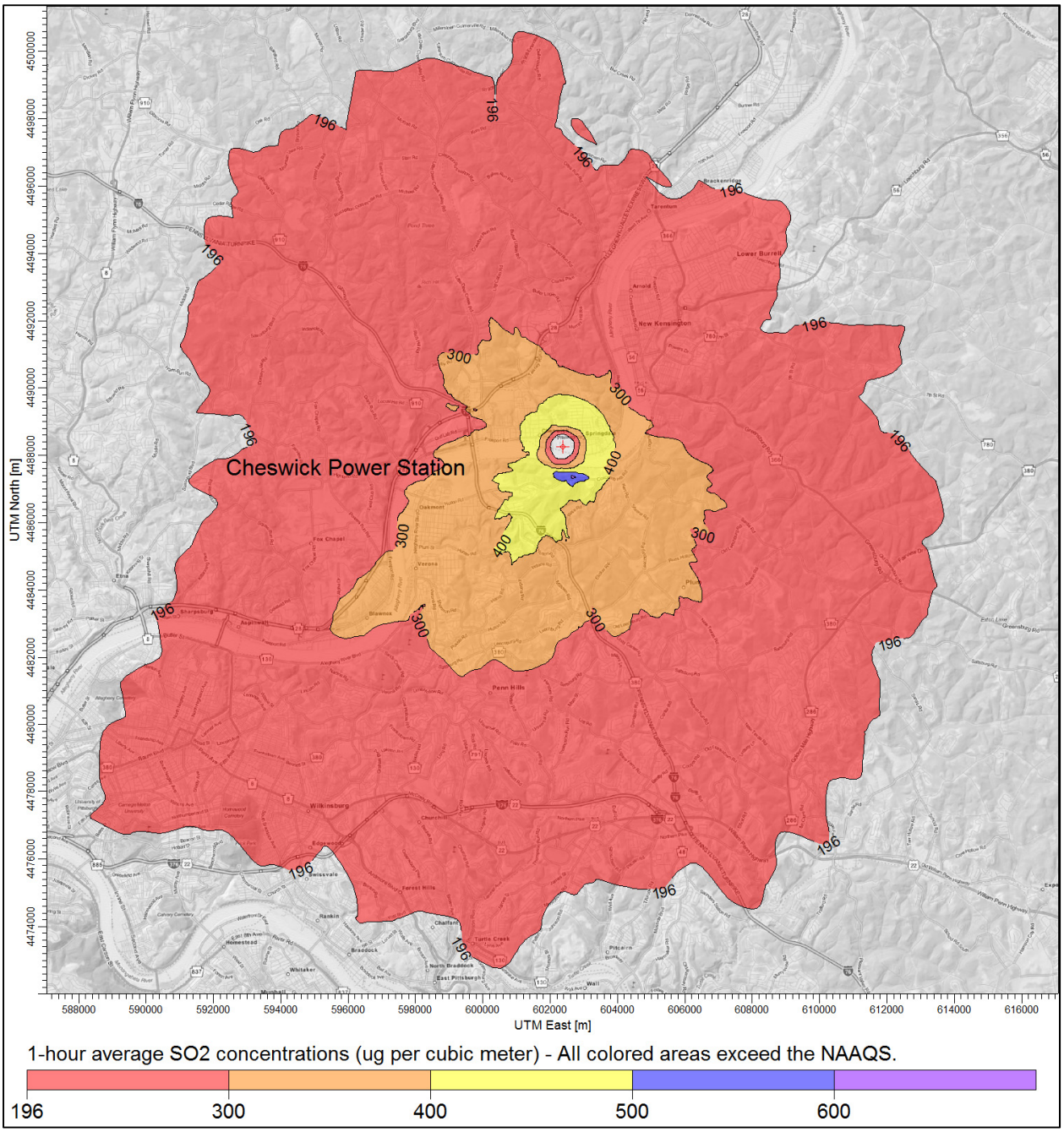


Figure 1 - Regional View - Cheswick Power Station (Allowable Emissions)

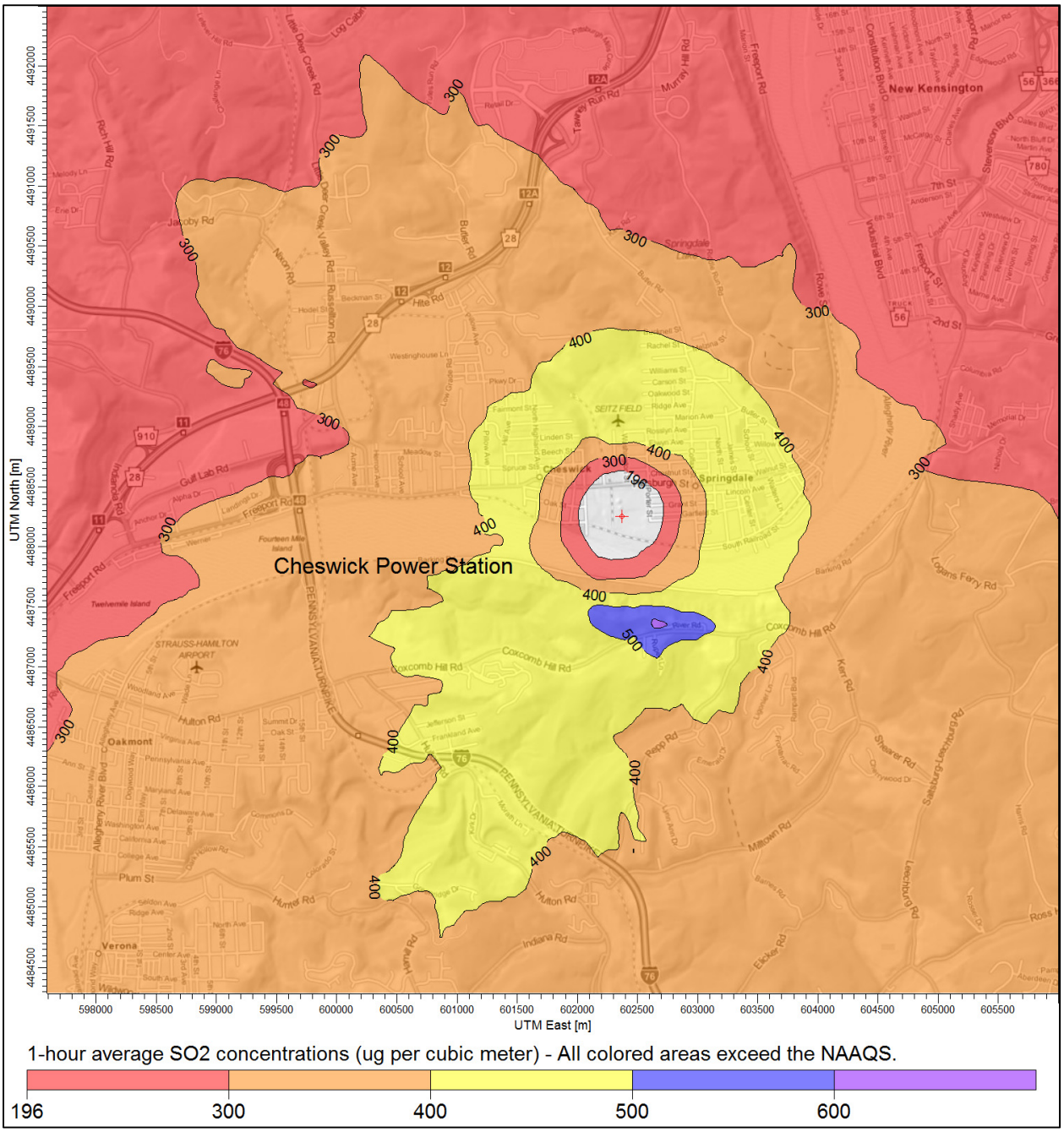


Figure 2 - Local View - Cheswick Power Station (Allowable Emissions)

3. Modeling Methodology

3.1 Air Dispersion Model

The modeling analysis used USEPA's AERMOD program, v. 12345. AERMOD, as available from the Support Center for Regulatory Atmospheric Modeling (SCRAM) website, was used in conjunction with a third-party modeling software program, *AERMOD View*, sold by Lakes Environmental Software.

3.2 Control Options

The AERMOD model was run with the following control options:

- 1-hour average air concentrations
- Regulatory defaults
- Flagpole receptors

To reflect a representative inhalation level, a flagpole height of 1.5 meters was used for all modeled receptors. This parameter was added to the receptor file when running AERMAP, as described in Section 4.4.

An evaluation was conducted to determine if the modeled facility was located in a rural or urban setting using USEPA's methodology outlined in Section 7.2.3 of the Guideline on Air Quality Models.[6] For urban sources, the URBANOPT option is used in conjunction with the urban population from an appropriate nearby city and a default surface roughness of 1.0 meter. Methods described in Section 4.1 were used to determine whether rural or urban dispersion coefficients were appropriate for the modeling analysis.

3.3 Output Options

The AERMOD analysis was based on five years of recent meteorological data. The modeling analyses used one run with five years of sequential meteorological data from 2008-2012. Consistent with USEPA's Modeling Guidance for SO_2 NAAQS Designations, AERMOD provided a table of fourth-high 1-hour SO_2 impacts concentrations consistent with the form of the 1-hour SO_2 NAAQS.[7]

Please refer to Table 1 for the modeling results.

---

[6] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, November 9, 2005.
[7] USEPA, Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards, Attachment 3, March 24, 2011, pp. 24-26.

4. Model Inputs

4.1 Geographical Inputs

The "ground floor" of all air dispersion modeling analyses is establishing a coordinate system for identifying the geographical location of emission sources and receptors. These geographical locations are used to determine local characteristics (such as land use and elevation), and also to ascertain source to receptor distances and relationships.

The Universal Transverse Mercator (UTM) NAD83 coordinate system was used for identifying the easting (x) and northing (y) coordinates of the modeled sources and receptors. Stack locations were obtained from facility permits and prior modeling files provided by the state regulatory agency. The stack locations were then verified using aerial photographs.

The facility was evaluated to determine if it should be modeled using the rural or urban dispersion coefficient option in AERMOD. A GIS was used to determine whether rural or urban dispersion coefficients apply to a site. Land use within a three-kilometer radius circle surrounding the facility was considered. USEPA guidance states that urban dispersion coefficients are used if more than 50% of the area within 3 kilometers has urban land uses. Otherwise, rural dispersion coefficients are appropriate.[8]

USEPA's AERSURFACE model v. 13016 was used to develop the meteorological data for the modeling analysis. This model was also used to evaluate surrounding land use within 3 kilometers. Based on the output from the AERSURFACE, approximately 24.6% of surrounding land use around the modeled facility was of urban land use types including Type 21 – Low Intensity Residential, Type 22 – High Intensity Residential and Type 23 – Commercial / Industrial / Transportation.

This is less than the 50% value considered appropriate for the use of urban dispersion coefficients. Based on the AERSURFACE analysis, it was concluded that the rural option would be used for the modeling summarized in this report. Please refer to Section 4.5.3 for a discussion of the AERSURFACE analysis.

[8] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, November 9, 2005, Section 7.2.3.

4.2 Emission Rates and Source Parameters

The modeling analyses only considered SO_2 emissions from the facility. Off-site sources were not considered. Concentrations were predicted for two scenarios shown in Table 2:

1) approved or allowable emissions based on permits issued by the regulatory agency, and

2) measured actual hourly SO_2 emissions obtained from USEPA's Clean Air Markets Database. To assure realistic emission rates were used, emissions from all units at the facility were combined and the hour with the maximum total facility emissions was used to determine the actual emissions.

Stack parameters and emissions used for the modeling analysis are summarized in Table 4.

Table 4 – Facility Stack Parameters and Emissions [9]

Stack	S-001
Description	Boiler No. 1
X Coord. [m]	602369
Y Coord. [m]	4488254
Base Elevation [m]	232.05
Release Height [m]	168.4
Gas Exit Temperature [°K]	328.706
Gas Exit Velocity [m/s]	17.012
Inside Diameter [m]	8.153
Allowable Emission Rate [g/s]	1,940
Maximum Emission Rate [g/s]	1,282

The above stack parameters and emissions were obtained from regulatory agency documents and databases identified in Section 2.3. The analysis was conducted based on 100% operating load using maximum exhaust flow rates and emission rates. Operation at less than full capacity loads was not considered. This assumption tends to under-predict impacts since stack parameters such as exit flow rate and temperature are typically lower at less than full load, reducing pollutant dispersion and increasing predicted air quality impacts. Stack location, height and diameter were verified using aerial photographs, and flue gas flow rate and temperature were verified using combustion calculations.

[9] Part VII - Stack Data, B001 - Main Boiler No. 1 with Flue Gas Desulfurization (FDG) System.

4.3 Building Dimensions and GEP

No building dimensions or prior downwash evaluations were available. Therefore this modeling analysis did not address the effects of downwash which may increase predicted concentrations.

4.4 Receptors

For Cheswick Power Station, three receptor grids were employed:

1. A 100-meter Cartesian receptor grid centered on Cheswick Power Station and extending out 5 kilometers.
2. A 500-meter Cartesian receptor grid centered on Cheswick Power Station and extending out 10 kilometers.
3. A 1,000-meter Cartesian receptor grid centered on Cheswick Power Station and extending out 50 kilometers. 50 kilometers is the maximum distance accepted by USEPA for the use of the AERMOD dispersion model.[10]

A flagpole height of 1.5 meters was used for all these receptors.

Elevations from stacks and receptors were obtained from National Elevation Dataset (NED) GeoTiff data. GeoTiff is a binary file that includes data descriptors and geo-referencing information necessary for extracting terrain elevations. These elevations were extracted from 1 arc-second (30 meter) resolution NED files. The USEPA software program AERMAP v. 11103 is used for these tasks.

4.5 Meteorological Data

To improve the accuracy of the modeling analysis, recent meteorological data for the 2008-2012 period were prepared using the USEPA's program AERMET which creates the model-ready surface and profile data files required by AERMOD. Required data inputs to AERMET included surface meteorological measurements, twice-daily soundings of upper air measurements, and the micrometeorological parameters surface roughness, albedo, and Bowen ratio. One-minute ASOS data were available so USEPA methods were used to reduce calm and missing hours.[11] The USEPA software program AERMINUTE v. 11325 is used for these tasks.

---

[10] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, Section A.1.(1), November 9, 2005.
[11] USEPA, Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards, Attachment 3, March 24, 2011, p. 19.

This section discusses how the meteorological data was prepared for use in the 1-hour SO_2 NAAQS modeling analyses. The USEPA software program AERMET v. 12345 is used for these tasks.

4.5.1 Surface Meteorology

Surface meteorology was obtained for Allegheny County Airport located near the Cheswick Power Station. Integrated Surface Hourly (ISH) data for the 2008-2012 period were obtained from the National Climatic Data Center (NCDC). The ISH surface data was processed through AERMET Stage 1, which performs data extraction and quality control checks.

4.5.2 Upper Air Data

Upper-air data are collected by a "weather balloon" that is released twice per day at selected locations. As the balloon is released, it rises through the atmosphere, and radios the data back to the surface. The measuring and transmitting device is known as either a radiosonde, or rawindsonde. Data collected and radioed back include: air pressure, height, temperature, dew point, wind speed, and wind direction. The upper air data were processed through AERMET Stage 1, which performs data extraction and quality control checks.

For Cheswick Power Station, the concurrent 2008-2012 upper air data from twice-daily radiosonde measurements obtained at the most representative location were used. This location was the Pittsburgh, Pennsylvania measurement station. These data are in Forecast Systems Laboratory (FSL) format and were downloaded in ASCII text format from NOAA's FSL website.[12] All reporting levels were downloaded and processed with AERMET.

4.5.3 AERSURFACE

AERSURFACE is a program that extracts surface roughness, albedo, and daytime Bowen ratio for an area surrounding a given location. AERSURFACE uses land use and land cover (LULC) data in the U.S. Geological Survey's 1992 National Land Cover Dataset to extract the necessary micrometeorological data. LULC data was used for processing meteorological data sets used as input to AERMOD.

AERSURFACE v. 13016 was used to develop surface roughness, albedo, and daytime Bowen ratio values in a region surrounding the meteorological data collection site. AERSURFACE was used to develop surface roughness in a one kilometer radius surrounding the data collection site. Bowen ratio and albedo was developed for a 10 kilometer by 10 kilometer area centered on the meteorological data collection site. These micrometeorological data were processed for seasonal

[12] Available at: http://esrl.noaa.gov/raobs/

periods using 30-degree sectors. Seasonal moisture conditions were considered average with no months with continuous snow cover.

4.5.4 Data Review

Missing meteorological data were not filled as the data file met USEPA's 90% data completeness requirement.[13] The AERMOD output file shows there were 2.4% missing data.

To confirm the representativeness of the airport meteorological data, the surface characteristics of the airport data collection site and the modeled source location were compared. Since the Allegheny County Airport is located close to Cheswick Power Station, this meteorological data set was considered appropriate for this modeling analysis. [14]

5. Background SO_2 Concentrations

Background concentrations were determined consistent with USEPA's Modeling Guidance for SO_2 NAAQS Designations.[15] To preserve the form of the 1-hour SO_2 standard, based on the 99th percentile of the annual distribution of daily maximum 1-hour concentrations averaged across the number of years modeled, the background fourth-highest daily maximum 1-hour SO_2 concentration was added to the modeled fourth-highest daily maximum 1-hour SO_2 concentration.[16]

Background concentrations were based on the 2009-11 design value measured by the ambient monitors located in Pennsylvania.[17]

6. Reporting

All files from the programs used for this modeling analysis are available to regulatory agencies. These include analyses prepared with AERSURFACE, AERMET, AERMAP, and AERMOD.

---

[13] USEPA, Meteorological Monitoring Guidance for Regulatory Modeling Applications, EPA-454/R-99-05, February 2000, Section 5.3.2, pp. 5-4 to 5-5.
[14] USEPA, AERMOD Implementation Guide, March 19, 2009, pp. 3-4.
[15] USEPA, Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards, Attachment 3, March 24, 2011, pp. 20-23.
[16] USEPA, Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard, August 23, 2010, p. 3.
[17] http://www.epa.gov/airtrends/values.html

GROUP AGAINST SMOG & POLLUTION
5135 Penn Avenue
Pittsburgh, PA 15224
(412) 924-0604
http://www.gasp-pgh.org

June 26, 2015

VIA EMAIL: dstern@achd.net

Mr. Darrel Stern, Chief of Monitoring
Allegheny County Health Department
Air Quality Program
301 39th Street
Pittsburgh, PA 15201

Re: **Comments to 2014 Air Monitoring Network Plan**

Dear Mr. Stern:

Please accept the following comments of the Group Against Smog and Pollution ("GASP") regarding the ACHD's Draft 2015 Air Network Monitoring Plan. Notice of draft Plan is posted on ACHD's website, which states that public comments will be received before June 27, 2015.

Thanks in advance for your consideration of these comments.

Very truly yours,

/s

John K. Baillie
Staff Attorney

COMMENTS OF THE GROUP AGAINST SMOG AND POLLUTION ("GASP") REGARDING THE ALLEGHENY COUTY HEALTH DEPARTMENT'S 2015 AIR MONITORING NETWORK PLAN

The Clean Air Act requires that each state implementation plan must "provide for establishment and operation of appropriate devices, methods, systems, and procedures necessary to … monitor, compile, and analyze data on ambient air quality."[1] 40 C.F.R. Part 58 specifies the state implementation plan requirements for monitoring and reporting data regarding ambient air quality, including "[m]inimum ambient air quality monitoring network requirements."[2] Ambient air quality monitoring networks operated by state or local agencies must satisfy the criteria in Appendix D to Part 58.[3]

I. ACHD'S AIR MONITORING NETWORK MUST INCLUDE SO_2 MONITORS LOCATED DOWNWIND FROM THE CHESWICK POWER STATION AND AT ACHD'S EXISTING MONITORING STATION IN GLASSPORT

Appendix D identifies three basic monitoring objectives: the provision of timely air pollution data to the public;[4] supporting compliance with ambient air quality standards and emissions strategy development;[5] and supporting air pollution research studies.[6] "Monitoring sites must be capable of informing managers about many things, including the **peak air pollution levels**, typical levels in populated areas, air pollution transported into and outside of a city or region, and **air pollution levels near specific sources**."[7]

Appendix D includes monitoring network requirements specific to each pollutant for which a National Ambient Air Quality Standard ("NAAQS") has been established, including

---

1 42 U.S.C. § 7410(a)(2)(B).

2 40 C.F.R. § 58.2(a)(5).

3 40 C.F.R. § 58.11(c).

4 App. D, § 1.1(a).

5 App. D, § 1.1(b).

6 App. D, § 1.1(c).

7 App. D, § 1.1.1 (emphasis added).

sulfur dioxide ("SO_2"). The requirements for SO_2 monitoring networks include (in Appendix D's Section 4.4.2) a method for determining the minimum number of monitors that must be operated in each "core based statistical area." According to that formula (and assuming that Allegheny County counts as a "core based statistical area"), ACHD is required to operate one SO_2 monitor only.[8] However, Appendix D recognizes that "[t]he total number of [SO_2] monitoring sites that will serve the variety of data needs will be substantially higher" than the minimum requirements.[9] Thus, ACHD currently operates five SO_2 monitors, which are located in South Fayette Township, Avalon, Lawrenceville, North Braddock, and Liberty.

The five SO_2 monitors currently operated by ACHD and called for by the 2015 Air Monitoring Network Plan are insufficient to accomplish the monitoring objectives set forth in 40 C.F.R. Part 58 Appendix D because there are not monitors that analyze SO_2 concentrations in the ambient air in the areas of the County that are most affected by emissions from the Cheswick Power Station ("Cheswick") and the areas of the County that are both heavily exposed to emissions from the industrial facilities in the Liberty-Clairton area and subject to atmospheric inversions. "SIP control strategies for SO_2 abatement are usually keyed on achieving the NAAQS at [] points of maximum concentration … [m]onitoring sites should be located at or near these points of maximum concentration as revealed by modelling to provide a continuing assessment of the situation."[10] Thus, when there is a single source "that contributes

---

[8] The minimum number of required monitors is determined according to the "core based statistical area's" "population weighted emissions index." An area's "population weighted emissions index" is "calculated by multiplying the population of [the area], … and the total amount of SO_2 in tons per year emitted within the …area,… The resulting product shall be divided by one million, providing a [population weighted emissions index" value], the units of which are million persons-tons per year." App. D, § 4.4.2.

According to the most recent National Emissions Inventory, there were 15,090.65 tons of SO_2 emitted in Allegheny County in 2011, and the most recent population estimate for the County by the Census Bureau is 1,231,255. Consequently, the County's "population weighted emissions index" is 18,580. "For any ["core based statistical area"] with a calculated ["population weighted emissions index"] value equal or greater than 5,000 but less than 100,000, a minimum of one SO_2 monitor is required within that [area]." *Id.*

[9] App. D, § 1.1.2.

[10] ROBERT J. BALL & GERALD E. ANDERSON, OPTIMUM SITE EXPOSURE CRITERIA FOR SO_2 MONITORING 9 (U.S.E.P.A. Pub. No. EPA-450/3-77-013) (1977). This is consistent with the Clean Air Act's directive that each state, and each local agency designated to implement the requirements of the Clean Air Act within a specific area of

overwhelmingly to SO_2 pollution" in an area, it is "very desirable to monitor the maximum ground-level contribution from that source since the attainment and maintenance of the NAAQS in the area would be highly dependent on the effectiveness of control measures applied to that source."[11]

A. An SO_2 Monitor Must Be Installed Downwind From Cheswick

Even after the installation of its flue gas desulfurization system, Cheswick remains the largest source of SO_2 emissions in Allegheny County – in 2013, the most recent year for which emissions data is reported on the Pennsylvania Department of Environmental Protection's ("DEP") eFACTS website, Cheswick emitted over 1,686 tons of SO_2.[12] Nevertheless, there is no monitor installed and operated to ascertain concentrations of SO_2 in the immediate downwind vicinity of Cheswick. All SO_2 monitors in ACHD's network are located upwind of Cheswick,[13] and the nearest downwind SO_2 monitor (which is operated by DEP) is in Johnstown, Cambria County, approximately fifty miles from Cheswick.[14] Ground-level concentrations of SO_2 emitted by Cheswick are likely to be greatest to the east and northeast of Cheswick, on the hilltops across the Allegheny River in Plum Township.[15] There is no monitor installed and operated to ensure that the SO_2 emitted by Cheswick does not cause ground level concentrations of SO_2 in inhabited areas immediately downwind from the Facility to exceed the NAAQS for SO_2.

---

a state, must adopt an implementation plan to achieve and maintain the NAAQS "within the entire geographic area" of the state or specific area over which the local agency is responsible. *See* 42 U.S.C. § 7407(a).

[11] BALL AND ANDERSON, *supra* note 12, at 10.

[12] *See* Exhibit A.

[13] The prevailing wind in Allegheny County is generally from the west or southwest. *See* http://www.windfinder.com/windstatistics/pittsburgh_intl_airport.

[14] *See* PENNSYLVANIA DEPT. OF ENVTL. PROT., PROPOSED AMBIENT AIR MONITORING NETWORK PLAN – 2013-2014, at A-9 (June 2013), *available at* http://www.dep.state.pa.us/dep/deputate/airwaste/aq/aqm/docs/FinalDraft_PA_Air_Monitoring_Network_Plan_2013.pdf.

[15] The plume from Cheswick's stack is clearly visible over these areas in satellite pictures. *See* Exhibit B.

In contrast, every other major source of SO_2 in Allegheny County has an SO_2 monitor located close by and downwind – U.S. Steel's Clairton and Irvin Works are upwind of ACHD's SO_2 monitor in Liberty Borough; U.S. Steel's J. Edgar Thomson Works is immediately upwind of ACHD's SO_2 monitor in North Braddock; Bay Valley Foods' facility on the North Side is upwind of ACHD's SO_2 monitor in Lawrenceville; and Shenango, Inc.'s coke ovens are immediately upwind of ACHD's SO_2 monitor in Avalon. Presumably, these monitors were installed, and are operated, at least in part to ensure that the ambient air in areas near those facilities attains the NAAQS for SO_2 despite the facilities' significant SO_2 emissions.

It makes little sense that Cheswick's SO_2 emissions are not monitored in similar fashion. ACHD's 2014 Air Monitoring Network plan is insufficient to accomplish the objectives identified by 40 C.F.R. Part 58 Appendix D because the Plan does not provide for a monitor that ascertains ground level concentrations of SO_2 in the ambient air in those areas of Allegheny County where such concentrations are likely to be the greatest, specifically, the hilltops in Plum Township that are across the Allegheny River from Cheswick.

B. An SO2 Monitor Must Be Re-Installed At ACHD's Existing Monitoring Station In Glassport

In recent years, ACHD's SO_2 monitor in Liberty has measured SO_2 levels that violate the 1-hour NAAQS for SO2, leading to the nonattainment area designation of a number of communities in southeastern Allegheny County.[16] SO_2 concentrations that were measured at the monitor that ACHD operated in Glassport until 2006 significantly exceeded the concentrations

[16] Specifically, EPA has designated an SO_2 nonattainment area consisting of the following communities: City of Clairton, City of Duquesne, City of McKeesport, Borough of Braddock, Borough of Dravosburg, Borough of East McKeesport, Borough of East Pittsburgh, Borough of Elizabeth, Borough of Glassport, Borough of Jefferson Hills, Borough of Liberty, Borough of Lincoln, Borough of North Braddock, Borough of Pleasant Hills, Borough of Port Vue, Borough of Versailles, Borough of Wall, Borough of West Elizabeth, Borough of West Mifflin, Elizabeth Township, Forward Township, and North Versailles Township. Air Quality Designations for the 2010 Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard, 78 Fed. Reg. 47191, 47203 (Aug. 5, 2013).

measured in Liberty,[17] likely as a result of local topography and the difference in elevation between the two sites:

> The base of the river valley lies at about 720 feet in elevation above mean sea level (MSL), while adjacent hilltops are over 1,100 feet MSL in elevation. Large temperature differences can be seen between hilltop and valley floor observations (*e.g.*, 2 to 7°F) during clear, low-wind, nighttime conditions. Strong nighttime drainage flows can cause differences of up to 180° in wind direction from the prevailing wind pattern with 3-4 mph downslope flows. Also, strong nighttime inversions can lead to poor dispersion scenarios on several days of the year.[18]

The Glassport SO_2 monitor purportedly was removed because the monitoring site was deteriorating and difficult to reach. However, almost all of the industrial and transportation sources of SO_2 that contributed to high concentrations of SO_2 in the ambient air in Glassport still operate today. Accordingly, it is probable that SO_2 levels in the ambient air in Glassport continue to exceed those measured in Liberty. Because "SIP control strategies for SO_2 abatement are usually keyed on achieving the NAAQS at [] points of maximum concentration"[19] such as the one in Glassport, ACHD should re-install an SO_2 monitor at its existing Glassport monitoring station. Such a monitor would permit an informed determination of whether the ambient air in low-lying areas in the areas actually attains the NAAQS for SO_2.[20]

II. ACHD SHOULD INSTALL AND OPERATE A PERMANENT MONITOR IN DOWNTOWN PITTSBURGH TO EVALUATE DIESEL EMISSIONS

An air toxics study that was performed between 2005 and 2008 for ACHD by researchers from Carnegie Mellon University determined that a "hotspot" for diesel particulate matter in the ambient air exists in Downtown Pittsburgh; concentrations of diesel particulate matter in

---

17 ACHD, SO_2 MODELLING PROTOCOL – 2010 STANDARDS, at 6 (Draft, March 2014).

18 *Id.*, at 4.

19 BELL AND ANDERSON, *supra* note 12, at 9.

20 *See id.* (stating that "[m]onitoring sites should be located at or near [] points of maximum concentration as revealed by modelling to provide a continuing assessment of the situation").

Downtown's ambient air pose a statistically significant cancer risk.[21] As a follow up, ACHD is presently conducting a second study focused on characterizing diesel emissions in Downtown Pittsburgh. Pursuant to this study, GASP understands that approximately forty monitors have been deployed in Downtown Pittsburgh to measure diesel emissions. Depending on the study's findings, ACHD should consider making one or more of these monitors a permanent part of its air monitoring network.

III. ACHD SHOULD CONTINUE TO OPERATE AIR TOXICS MONITORS DOWNWIND OF THE OPERATING COKE OVENS ON NEVILLE ISLAND AND IN CLAIRTON

Unless properly controlled, coke ovens can emit substantial quantities of air toxics, including benzo(a)pyrene:

> Benzo(a)pyrene plays an important role with regard to the environmental assessment of the coking process. Very often it is used as a guide substance for polycyclic aromatic hydrocarbons (PAH) which can be emitted from leaks at the coking chambers. In order to reduce these fugitive emissions, measuring methods are necessary by which the made progress can be quantified. Reliable statements on the amount of emitted [benzo(a)pyrene] are indispensable, too, for making a forecast on the [benzo(a)pyrene] burden in ambient air of the surrounding [areas].[22]

ACHD must continue to operate benzo(a)pyrene monitors at its monitors in Avalon and Liberty, which are downwind from Shenango, Inc.'s coke works on Neville Island and U.S. Steel's Clairton Coke Works, respectively, to ensure that the air toxics emitted by those facilities are minimized and that the air toxics load in the communities surrounding those facilities is maintained at levels that do not increase health risks in nearby communities.

---

[21] ALLEN ROBINSON, ET AL., AIR TOXICS IN ALLEGHENY COUNTY: SOURCES, AIRBORNE CONCENTRATIONS, AND HUMAN EXPOSURE, ACHD Agreement # 36946 (March 2009), at 4.

[22] Michael Hein and Manfred Kaiser. *Environmental Control and Emission Reduction for Coking Plants*, in AIR POLLUTION - A COMPREHENSIVE PERSPECTIVE (Dr. Budi Haryanto, ed.), at 237 (ISBN: 978-953-51-0705-7, InTech, DOI: 10.5772/48275 (2012)), *available at*: http://www.intechopen.com/books/air-pollution-a-comprehensive-perspective/environmental-control-and-emission-reduction-for-coking-plants.

EXHIBIT
A

eFACTS on the Web
DEP Information
- About DEP
- Contact Us
- DEP Home

Search eFACTS
- Authorization Search
- Client Search
- Facility Search
- Inspection Search
- Mammography Search
- Name Search
- Pollution Prevention
- Sites by County/Municipality
- Site Search

Reports
- Emission Summary
- Facility Emissions

Other Sites
- eMapPA
- eNotice
- EPA ECHO
- EPA Envirofacts
- Licensing, Permits, and Certification
- The PA Code

Facility Emissions Report

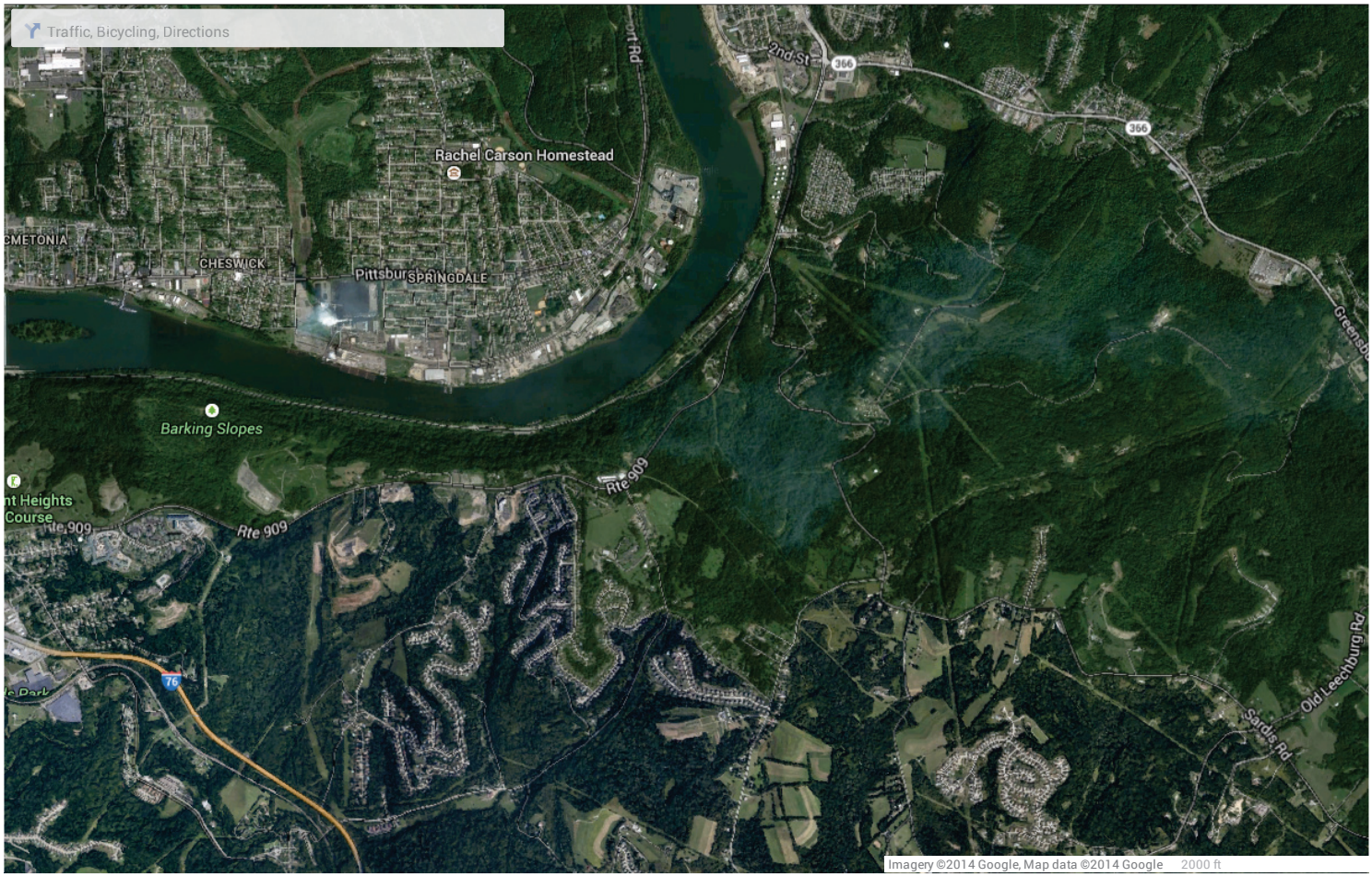
Year: **2013**
County: **Allegheny**
Pollutant: **Sulfur Oxides**
Top Records: **10**

Primary Facility ID	Primary Facility Name	Tons/Year
737442	NRG MIDWEST LP/CHESWICK	1686.3993
737439	USS/CLAIRTON WORKS	1637.1483
737436	USS CORP/EDGAR THOMSON WORKS	1454.0281
737318	US STEEL CORP/IRVIN PLT	507.4236
737435	SHENANGO INC/SHENANGO COKE PLT	285.1264
737263	BAY VALLEY FOODS LLC/PGH	208.7961
737350	GUARDIAN IND CORP/JEFFERSON HILLS	70.3772
737434	ALLEGHENY LUDLUM LLC/BRACKENRIDGE	31
737336	ALLIED WASTE SVC OF PA/MSW LDFL	18.932
737323	REDLAND BRICK INC/HARMAR PLT	15.8

Total Emissions for Selected Records: 5915.0310
Total Emissions for Selected Area: 5970.5630

Run report again

EXHIBIT
B


Traffic, Bicycling, Directions
Rachel Carson Homestead
CHESWICK
SPRINGDALE
Barking Slopes
Rte 909
Rte 909
2nd St
366
366
Old Leechburg Rd
Sardis Rd
76
Imagery ©2014 Google, Map data ©2014 Google
2000 ft